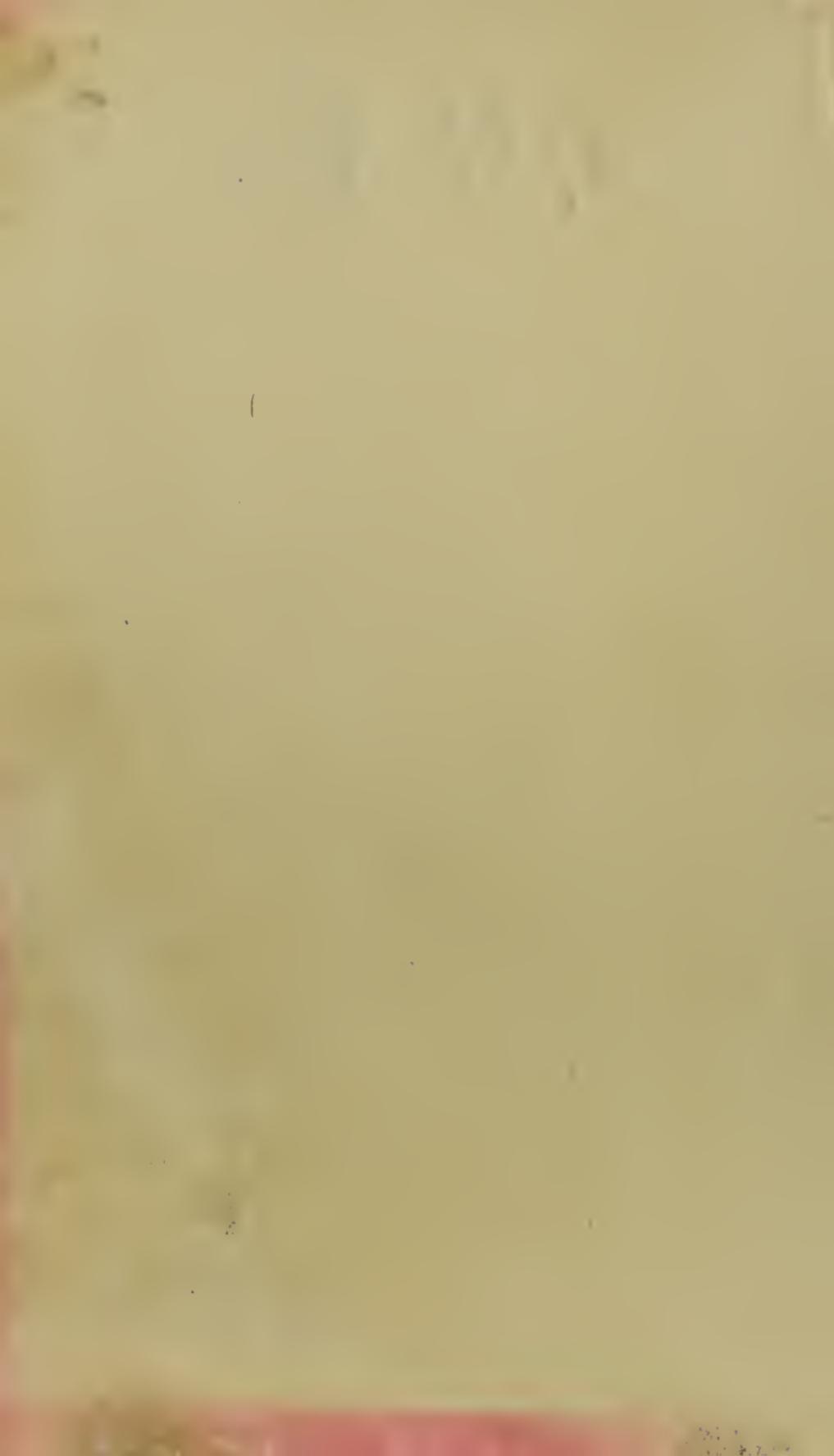


MATERIALS
RE-STATEMENT

COHEN







WORKS BY CHAPMAN COHEN.

RELIGION AND SEX.—A Systematic survey of the relations between the Sexual instinct and morbid mental states, and the sense of religious exaltation. Price 6s.

THEISM OR ATHEISM? The Great Alternative. Price 3s. 6d.

A GRAMMAR OF FREETHOUGHT. Price 5s.

DETERMINISM OR FREEWILL. Price 2s. 6d.

THE OTHER SIDE OF DEATH.—With an Analysis of the phenomena of Spiritualism. Price 3s. 6d.

ESSAYS IN FREETHINKING. Price 2s. 6d.

MATERIALISM RE-STATE

BY
CHAPMAN COHEN.

(Issued by the Secular Society, Ltd.)



LONDON :
THE PIONEER PRESS,
61 FARRINGDON STREET, E.C.4.

1927.

Printed and Published by
THE PIONEER PRESS
(G. W. FOOTE & CO., LTD.)
61 Farringdon St., London
E.C.4.

PREFACE.

THE famous Bishop South was once complimented by Queen Anne on a sermon to the delivery of which she had just listened. But, she added, "It was very short." "Madam," replied the bishop, "It would have been shorter had I had the time to make it so." Something of this kind must be my apology for trying to pack so great a subject into so small a space. Short as this book is, it would have been shorter had I possessed the capacity to make it so. Given the capacity to scribble, nothing is easier than to write a big book. One can be very diffuse, and this helps to cover defects in thinking. On the other hand, a short book concentrates the reader's attention, it also compels the writer to clarify his thoughts under penalty of discovery. With judicious "padding" any one of the following chapters could have been expanded easily to four times its present size. I should not have said more that was worth reading, I should only have taken greater space in which to say it. And in the end the reader would have been left in some doubt as to what it was all about. I am a strong believer in small books. If a reader does not understand a small book on a great subject, a larger book is not likely to have any better result. If he does grasp what is set down, he will have had a survey of the country, and he can explore it in detail at his own time and in his own way.

PREFACE

What I have here attempted is to give a bird's-eye view of one of the oldest and one of the most controverted subjects in the history of philosophy. There is none other that has aroused so much bitter opposition; and that opposition has been almost entirely theological in origin. It has been said by one writer on philosophy, that the Materialism of the ancients would not have aroused so much opposition but for the "irrelevant denial of a religious belief." That seems to me like saying that Materialism would not have aroused opposition had it not been opposed to something. For I do not agree that the at least practical denial of the agency of the Gods was irrelevant. As I have tried to show, for science to exist thought needed to shake itself free from theological control. That the challenge was explicit instead of implicit was due to the freedom of speculation in the ancient Greek world. In a world where the "law" of natural changes was universally found in the will of this or that God, no great step could be taken without challenging theistic belief. And in earlier days the belief in religion was too strong for opposition to be avoided, as is the case to-day, by paying lip homage to a deity, while divesting him of every shred of usefulness. And whether we are dealing with ancient or modern times, it should be quite clear that you cannot put forward an explanation of the changes which take place in the universe as a consequence of the interaction of forces inherent in the substance of things, without reducing "God" to a nullity. A God who does nothing might just as well not exist.

The thoroughness of the Materialistic challenge was such that it has never admitted of anything in the nature of a compromise. Had this been possible, hard-pressed theologians might have attempted to deal with Materialism as they have tried to adapt themselves to the theory of evolution. The battle over Evolution was short, sharp, and decisive. The course of a single generation saw it accepted by scientific men throughout the civilized world, with theologians tumbling over each other to explain that, rightly considered, evolution made for a nobler belief in God, and was thoroughly harmonious with the deeper truths of religion. This was, of course, rubbish; but the majority of scientific men were only too anxious to be at peace with the religious world, and although they may have stuck their tongues in their cheeks, and expressed their real opinions privately, in public they solemnly accepted what was offered. No such course was possible with Materialism. You could not pretend that everything depended upon God when all the time you were demonstrating that everything went on without him. It was too absurd to worry about a God in a world where all that occurs is the result of the composition of natural and eternally existing forces. The belief in God does not live on the possibility that once upon a time he may have done something; nor does worship thrive with a God who has not the power to gratify the wishes of his devotees.

Present-day theologians—time having robbed them of the power to meet the Materialist with the stake or the prison—have adopted another plan. In the latter

half of the nineteenth century they loudly asserted that Materialism was scientifically unsound. But they had the mortification of seeing materialistic conclusions accepted by men of science, and, worse still for the theologians, to see the principle of Materialism universally adopted by them. So for some years another plan has been tried. This is to set up the cry that the Materialism of the nineteenth century is dead. It is no longer accepted by leading and responsible thinkers. Those who would stand well with the clergy, journalists who are as competent to talk about Materialism as a cow is to express an opinion on the causes of an eclipse, repeat the cry, and by dint of continuously advertising the alleged fact the man in the street decides that this terrible Materialism, whatever it may be, is no longer believed in by those who ought to know all about it. How wide of the truth this is I leave it for readers of the following pages to decide. Certainly some theories once held by leading Materialists may no longer be acceptable. Conceptions of "matter" and "force" may need revision. But such things are no more fatal to Materialism than the replacement of the Ptolemaic system by the Copernican was fatal to the science of astronomy. The essence of Materialism lies in the simple statement that every phenomenon in the universe is the consequent of a composition of natural forces. It is this that the anti-materialist has to disprove. If he can do this he will have destroyed Materialism. But he will at the same time have destroyed the possibility of a science of nature. From the point of view of science it is a case of Materialism or chaos.

CONTENTS.

				<i>Page</i>
PREFACE	...	...	...	v.
 CHAPTER I.				
A QUESTION OF PREJUDICE	...	...	...	ii
 CHAPTER II.				
SOME CRITICS OF MATERIALISM	...	...	...	17
 CHAPTER III.				
MATERIALISM IN HISTORY	...	...	...	24
 CHAPTER IV.				
WHAT IS MATERIALISM?	...	...	...	45
 CHAPTER V.				
SCIENCE AND PSEUDO-SCIENCE	...	...	...	60
 CHAPTER VI.				
THE MARCH OF MATERIALISM	...	...	...	79
 CHAPTER VII.				
ON CAUSE AND EFFECT	...	...	...	89
 CHAPTER VIII.				
THE PROBLEM OF PERSONALITY	...	...	...	103

MATERIALISM RE-STATED.

CHAPTER I.

A QUESTION OF PREJUDICE.

IN theory there does not seem any valid reason why Materialism should not be discussed as dispassionately as any other question of pure science. In practice, it seldom occurs. It is repudiated rather than rejected; denounced more often than it is argued against. Passion and prejudice are, indeed, shown in the way it is introduced into a discussion. It is seldom mere materialism that is being criticized, but nearly always "crass" materialism, or "crude" materialism, or Materialism qualified by some other deprecatory epithet. One may be excused, therefore, for suspecting that Materialism is opposed because it is hated, rather than because it is believed to be untrue. People are afraid as much on account of what it removes as on account of what it establishes. Its enemies are more afraid of discovering it to be true than they are concerned in proving it to be false.

So curious a position is worthy of an attempt at explanation; nor is it very difficult to discover the root

of this bitter antagonism. It is to be found in the sharp contrast of two utterly irreconcilable modes of thought. Science begins in the attempt to reduce an apparent chaotic assemblage of natural happenings to order, to formulate "laws" that will describe what transpires, and enable man to predict what will occur as the inevitable result of the play of natural forces. But in doing this it has to meet an antagonist that is in possession of the field, entrenched behind the ramparts of custom, and buttressed by the fears of the crowd. Henceforward, Naturalism and Supernaturalism stand as opposed forms of thought, fighting for the mastery of the intellectual world.

Between the two there is no half-way house; no accommodation is possible. There is no border-land of ambiguous phrases, or hazy beliefs such as would admit of at least a friendly compromise. Naturalism can gain ground only at the expense of Supernaturalism. It is true that nowadays a discredited Supernaturalism would gladly share the disputed territory and would freely hand over the whole region of the inorganic world to Naturalism, if it may only retain command of the world of life and thought. But this, Naturalism cannot admit. Its aim is to conquer the whole realm of science, from star-dust to planet, from the tiniest speck of living matter up to the highest output of the human mind. Its claim is to rule over the world of human thought, as well as over the physical universe. The utmost that Supernaturalism has to hope for, is a lingering rule over a diminishing territory, with the certain prospect of complete dispossession at the end.

The leaders of the religious world have never been in any real doubt on this point; they have fought this uncompromising enemy with the utmost of their strength. They have brought to the fight all the tricks of a never too scrupulous body of controversialists, working upon the inbred fear that semi-civilized humanity has of its tribal gods. They said, with truth, that Materialism was an attempt to take the control of the universe out of the hands of the gods. Greek thinkers had to face this charge in the morning of the history of philosophy; Kepler, Copernicus, Newton, Lyell, and Darwin in modern times. Materialism was made one of the most accursed words in the religious vocabulary. Depending upon normal humanity's dislike to careful thinking, Materialism was persistently identified with loose living, and was thundered against, now with theological curses, now in terms of moral indignation. Religious controversialists strove, it must be admitted with some success, to make the Materialist a religious outcast and an ethical pariah.

"Give a dog a bad name . . ." The rest was easy. The course of human evolution has placed a value upon physical courage, and man is a rare fighting animal. But the influence of established religion has placed an enormous value upon mere conformity, and has so kept the level of moral courage very low. Attack a doctrine as bad, low, degrading, and at once there are crowds of men and women who fear association with it. They will not trouble to find out whether the bad name is deserved or not, it is enough that it is given. Their sole anxiety will be to escape

the imputation of keeping evil company. In this respect education has not a very great effect. Nothing but the fear of theological prejudice will explain why so many scientific workers, whose whole work takes Materialism for granted, take such elaborate care to explain to the world that they are not Materialists. The theologian does not hesitate to use his power, and the ordinary publicist or scientist is afraid to brave it. Some will explain that they do not use the term Materialist because it is so much misunderstood. And that simply encourages the priest to go on as he has been going. When Charles Bradlaugh was urged to take some name other than Atheist for the reason that the term was open to misunderstanding, he replied that this was an additional reason for keeping it. But all are not Bradlaughs; and many who find themselves drifting into an unfashionable heresy, will be seen trying to discover some remnants of grace that will commend them to the orthodoxy they are forsaking.

Thanks to these circumstances the champions of Supernaturalism have always found "Materialism" a very useful brick to heave at their opponents. During the war, when we were opposed to one of the most Christian nations in Europe, it suited the clergy to talk at large about the war being due to Germany's Materialism, and thus enlist the ignorance and jingoism of the mob against Naturalism. If there is danger threatened to the industrial life of the nation, it is due to the spread of Materialism. If there is an outcry over some alleged increase of crime, it is at once attributed to the same cause. And all the time

the fact that among no people in the world is mere money and brute strength so worshipped as among the Christian nations, and that none are more ready to prostitute the discoveries of science to the end of waging war or to the mere amassing of wealth, is quietly ignored.

The trick is transparent. In the first instance, the term is used in an ethical sense as implying the craving for mere sensual pleasures. Having gained assent here, the next step is to switch over the feelings thus aroused to a condemnation of scientific materialism, which is a different thing altogether. It is nothing to the average pietist to point out that if there is a disinterested class in the country it is to be found among scientific workers. We are not yet sufficiently enlightened to hold out prizes for the serious student of science. He can look forward to none of the "plums" which reward the successful politician, the victorious general, or the fashionable preacher. He works hard, he dies poor, and while his work remains an enduring and a valuable heritage of the race, so far as the mass of the people are concerned, he rests in an unknown grave. And it is left for a clergy, who can only rise to the level of a concerted enthusiasm when it is a question of securing higher salaries or greater power, to prate of the (ethical) materialism of science.

It has indeed been the fate of Materialism to suffer at the hands of both its friends and its enemies. At the hands of its enemies, because of the reasons already given, and at those of its friends, as a consequence of sheer misunderstanding. Too often the

fatal mistake has been made to take a statement of Materialism as laid down by anti-materialists, with the result that the Materialist has been found defending positions he need not defend, and accepting statements of his case that reduce it almost to an absurdity. One writer jumps off with the remark that Materialism stands or falls by the atomic theory of matter, or that we are bound as Materialists to explain mental phenomena in terms of matter and motion, and we at once find Materialists who accept the statements and set about defending them. But it does not follow that a Materialist is bound to defend a conception of matter current a couple of centuries ago, or indeed that he need bother about "matter" at all. How we are to conceive matter it is the business of science to determine; and we are at liberty to modify our conception just as developing knowledge may demand. Our chief concern here should be to make quite sure what it is that matter stands for in a sound, scientific philosophy. Above all, it is a useful plan to follow the legal rule of carefully examining the indictment to which we have to plead. Otherwise we may find ourselves answering an indictment that has no legal warranty whatever. Had both these rules been followed, many defences of Materialism would certainly never have been written, and the inconsequential character of many criticisms of Materialism would have been made clear.

CHAPTER II.

SOME CRITICS OF MATERIALISM.

A VERY large book might be filled by setting down and replying to the various misstatements of Materialism that have been drawn up from time to time. I have no intention of doing this, but it will help to clear the air if a few representative specimens are taken. The first example is a very recent one from Lord Balfour, who has somehow or the other managed to gain the reputation of an able philosophic thinker. In a quite recent utterance (*Introduction to Science, Religion and Reality*, 1925) he says, with a charming categorical finality:—

We are spiritual beings, and must take account of spiritual values. The story of man is something more than a mere continuation of the story of matter. It is different in kind. If we cannot calculate the flow of physical events, that is because our knowledge of natural processes is small, and our power of calculation feeble. If we cannot calculate the course of human history, that is because (among other reasons) it is inherently incalculable.

It is not easy to disentangle a statement of this kind, because one is not quite certain what it means, and one may be forgiven the suspicion that this uncertainty extends, in all probability, to the author of it. If Lord Balfour means that a Materialist holds that the story of human nature may be ex-

pressed in terms of physics, the statement is too scientifically absurd to require confutation. But if he does not mean that, what does he mean? If, by spiritual beings, Lord Balfour means that man is capable of ethical feelings and you must take account of ethical "values," the reply is that Materialism fully allows for that. If it means that the psychic side of human life evidences the existence of a "soul," one would much like to have the proofs. At any rate it is hardly a proposition to be laid down as though it ranked as an axiom.

In the concluding sentences I am not sure whether Lord Balfour speaks of calculating in the sense of forecasting or not. In any case, he quite correctly ascribes whatever inability exists in this direction to our lack of knowledge. But when we turn to human nature, the difficulty, instead of being attributed to the same cause, and to the enormous complexity of the factors involved, the inability to forecast human history exists because it is *inherently* incapable of calculation. And that is a statement both scientifically unsound, and logically absurd. We do calculate the course of human history when we say that the war-like policy of one of the European powers will sooner or later lead to war, or when we say that by making the tax on whisky too high there will be a diminution in the consumption of that kind of drink. We calculate the actions of human beings in a thousand different ways, both individually and in the mass. Granted, this is not done with the accuracy with which an astronomer calculates the course of a comet; that, again, is a question of our ignorance,

not of the absence of causation. Perhaps the most interesting thing about Lord Balfour's statement is the implied admission that opposition to Materialism must rest upon a denial of universal causation. And in that he is true to type.

My next example is from Professor Needham, the eminent Cambridge bio-chemist, who, after admitting that "the triumph of mechanistic biology has been indeed a real one, for it has succeeded in abolishing the vital force which so unnecessarily complicated the whole question," concludes that "Mind and all mental processes cannot receive explanation or description in physico-chemical terms." We shall have occasion later to deal with this particular fallacy, but for the present it is enough to say that Professor Needham, like Lord Balfour, is tilting at windmills. A scientist of his standing should, however, be on his guard against such a radical misunderstanding of scientific method as is implied in the passage cited. It should be enough to ask him: If it *were* possible to explain mental processes in physico-chemical terms, where would be the need for "laws" of biology or of psychology? The very existence of such laws are enough to prove that his criticism harbours a gross fallacy. The only need for a law is to provide a descriptive formula of what is observed to be the fact; and science, by framing laws of psychology, announces that laws of chemistry and physics will not cover the new range of facts. But that again has not anything to do with the soundness of Materialism.

My third example is from a book on *Mind and Matter*, written by Mr. C. E. M. Joad. Mr. Joad

writes as the champion of a somewhat out-of-date vitalism, and aims at presenting philosophy in a way to be comprehended by the common man. But if the common man has no greater grasp of the matter than has Mr. Joad, his enlightenment is not likely to be very great. Mr. Joad sets out with the categorical statement that the Mechanistic or Materialistic view of the universe has broken down; and, in the first few pages of his book, gives us the following items of information :—

Until recent years the prevalent view among scientists was that whatever existed in the universe obeyed the laws that were known to operate in the world of matter . . . Mind was a form of matter . . . The universe . . . is conceived as a gigantic clock. Somebody or something at some time or other wound the clock up. How the winding-up process came to pass, of course, nobody knows; certainly not the Mechanist . . . Many physiologists came to regard mind as a rarified material essence surrounding the brain like the halo round the head of a saint.

It is rather difficult to deal seriously with such an unphilosophic and hopelessly unscientific jumble of words, but I will try to do so, because Mr. Joad is saying in a clumsy way what many others say more carefully. His method may be described as consisting in attributing a series of ridiculous statements to his opponents, and then proceeding to prove them to be absurd. And of course the statements are absurd—but the absurdity belongs to Mr. Joad.

To begin with, one would dearly like to know what scientist believed or taught that everything that existed in the universe obeyed only the “laws” of matter. Surely the most materialistic of scientists never denied the laws of biology? And if they did

not, how could they possibly have held that only the laws of matter operated? Just a little idea of what are the functions of scientific laws would have prevented the writing of that sentence. Not less remarkable is the Materialist who believes that the universe was once wound up like a clock. Seeing that the Materialist has always insisted that a beginning to the universe is an unthinkable proposition, while the Vitalist, or Theist, has always asserted that at one time the universe was actually set going "like a clock," it is clear that Mr. Joad has got the positions a little mixed.

But his crowning absurdity is in the final sentence cited: "Many physiologists came to regard mind as a form of matter surrounding the brain like the halo round a saint's head." Mind, says the Materialist, is a function of the organism. Who is the physiologist, who after saying this, went on to say that the function was another form of the organism? Again, contractility is a function of muscular tissue. So says everyone. But who believes that contractility hangs round the muscle like a halo round a saint's head? How does a function hang like a halo round an organ? Perhaps Mr. Joad may explain. Of course, the Materialist may be quite wrong when he asserts that thought is a function of the organism, but it would require a far better informed mind and a far more acute reasoner than Mr. Joad to prove him to be so. Mind as a rarified form of matter, a function hanging round an organ, is quite the funniest thing in a pretendedly scientific book that has appeared for many a day.

A final illustration of yet another form of fallacy may be taken from Maeterlinck. Following a common line, he says that Science,

... has recently been compelled to admit that no such thing exists as dead matter, and that a pebble, a lump of lava, sterilized by the fiercest of internal fires, is endowed with an intromolecular activity which is absolutely fantastic, expending in its internal vortices an energy which would be capable of hauling whole railway trains round and round the globe. Now what is this activity, this energy, if not an undeniable form of the universal life?

Maeterlinck is not a man of science, and some licence may be granted him. But, alas, there are many others who write in the same way in professedly scientific works. Again, I do not know anyone entitled to speak in the name of Materialism who ever conceived matter to exist apart from energy, and even if they did, it would be manifestly unfair to take a generally discarded and old-fashioned view of matter and insist upon Materialists holding it for ever. Further, it is quite clear that "dead" matter was never spoken of save to distinguish it from matter that was "alive." Moreover, when science speaks of the inertia of matter, it does not imply an absence of energy at all, it means only that matter will persist in a given state unless something—some re-arrangement of its internal energies, or the incidence of some external force occurs to disturb it. And that is not a mere assumption; it is an axiom. It is a necessity of thought. Change in any direction, or with anything, implies a cause of change—in other words, a new conjuncture of forces necessitating a new balance.

For the rest, one may note the familiar appeal to man's sense of wonderment—as though one part of nature were intrinsically more wonderful than another—and then having administered the narcotic, quietly to take "energy" as an equivalent of universal life. There is nothing here other than the usual religious appeal for the support of sheer ignorance, and it ought not to impose upon anyone. Yet it does, apparently, impose upon millions. And the same people who thus set one part of nature against another on account of its greater degree of wonderfulness, will be found quoting with approval Tennyson's "Flower in the crannied wall," thus subscribing to the saner view that any part of nature is equal to any other part in the degree of wonder or "mystery" it exhibits.

Finally, there is not the slightest justification for supposing that the form which energy assumes in the universe at large is identical with the specialized form of energy which we find exemplified in living organisms. When such a claim has been made on behalf of Materialism, it has been strenuously denied. When it is said on behalf of supernaturalism, it is passed without comment. Physical energy and vital energy belong to two different scientific categories, and energy "in itself" is just about as intelligible and as useful as the metaphysical "thing in itself." It is standing science on its head. In fact, it is not science at all. It is not philosophy. It is just nonsense; and the fact that a man justifiably occupying a lofty position in the world of letters utters it, ought not to prevent our calling it by its proper name.

CHAPTER III.

MATERIALISM IN HISTORY.

CONVENIENTLY one may consider Materialism under two different aspects. There is, first, its historical significance; second, its scientific meaning. The two overlap and influence each other, of course, and we shall have more than once to note the danger of separating things in thought that are not separated in fact. The movement of life is a continuous synthesis; it is the function of philosophy to understand by a continuous analysis. So it is well to take the historical position first, because that will enable us the more fully to realize what it is that Materialism has always stood for. Moreover, the logical order is not always the historical one, and it may be that only after a considerable time ideas are arranged in the order to which they logically belong. Neither is it quite safe to set down a mere definition of a leading or an important word. Words are, so to speak, functions of thought, and it is to thought we must go to find out their true significance. It is in the evolution of words that we find their true nature and function; dictionaries often register no more than a passing phase of meaning.

The mental life of man begins in a world of illusion. The stars, so far away that a ray of light, travelling

at an almost incredible speed, takes years to reach us, seem almost within grasping distance. The earth is certainly flat. Disease is the work of evil spirits; good fortune that of beneficent ones. The air, the woods, the waters, are peopled with ghostly forms that haunt man's footsteps, and to gain whose goodwill is a matter of life or death. In the medley of existing forces there appears no co-ordination; everything bears the hall mark of caprice. Dreams ape the part of realities, and realities take on the appearance of a nightmare. Words usurp the place of things, and things have no clear relation to each other. Inconstancy appears to reign where later knowledge shows constancy to be the rule. If the world had been created by some almighty power, with the deliberate intention of deceiving and misleading man, it could not have been better devised. For long ages so far as men thought about things their conclusions were fundamentally wrong. Gods and ghosts were the prime movers. They were everywhere. It was the golden age of religion, and human life stood as a parenthesis between the ghost world out of which it came, and the ghost world into which it went.

Before a science of nature could commence, the universal reign of the gods had to be questioned and curtailed. It was one of the conditions of progress. Until that was accomplished very little could be done. So soon as this step was taken, and the challenge offered, there began the first great cleavage in the mental life of man, a cleavage at the side of which, as Tylor rightly says, all others are unimportant. Naturalism stood opposed to Supernatural-

ism. That was the fundamental division in the dawn of science; it remains the fundamental division to-day. The fight for the interpretation of nature still lies between the Naturalist and the Supernaturalist. It is true that to-day no one gives complete adherence to supernaturalism. Its most hardened supporter is willing to concede the soundness of the Naturalistic interpretation within certain limits. But there are various attempts to draw lines of demarcation, and under the guise of "mysticism" and much pseudophilosophizing a diluted supernaturalism prevails. Still, Naturalism and Supernaturalism are the logically contrasted poles of thought. Between them the essential battle is being fought. All else are affairs of outposts; and the one feature of this age-long contest has been the steady advance of Naturalism.

It is to the credit of ancient Greece, that the first step towards the foundation of a science of nature was taken in that country. Some amount of positive knowledge must have been present in very early human society—how otherwise could life have maintained itself? The qualities of special things were noted, and the influence of certain conditions on human life. In the case of the Egyptians, the Babylonians, and others, there existed a very considerable body of acquired knowledge, and a high development in the arts of life. But, as Burnett and others have pointed out, there is a great distinction between the existence of knowledge concerning particular groups of facts, and a scientific conception of natural processes. It is true that science must rest upon a knowledge of facts and the relations between them, but

the mere collecting of facts no more entitles a man to be called a scientific thinker, than a collection of famous pictures by a Chicago meat packer suffices to make him a specialist in art. Facts are the raw material of science; it is the use made of them, the manner in which they are handled, that creates science.

That the Greeks were able to take this important step may partly be explained by the fact that they were not burdened by anything in the shape of a "sacred" literature. What this meant as a shackle upon investigation and free discussion, the history of Europe, ever since the establishment of Christianity, shows. Under its malign influence many important discoveries were lost sight of altogether, while every man who attempted an independent investigation of natural phenomena, and published the results, was made to feel the vengeance of the Christian Church. From Roger Bacon to Darwin, the story runs with the same melancholy burden, and even to-day the number of scientific investigators are not few who feel they must go out of their way to make announcements to all whom it may concern, that their discoveries are not of necessity hostile to the Christian religion.

At any rate, it is surely not without significance that the people with whom it may be said the foundations of science were laid, were without a sacred literature, and in whose literature, as Professer Singer has pointed out, there has survived not a single work by a priest. Whatever difficulties the Greek thinker had to face, he had not to dread being

dragged before an Inquisition composed of ignorant priests, and risking imprisonment, or even death, for having broken some of the canons of the Church, or controverted some of the teachings of Holy writ.*

The peculiar and valuable contribution of the Greek mind to the intellectual development of mankind is that it was the first, so far as is known, to set out on that search for some general "law" of the changes everywhere going on. Consciously or unconsciously this involved a direct challenge to supernaturalism, since it meant lifting things out of the control of the "Gods," and reducing nature to a completely deterministic order.† All things were constantly changing. So much was quite clear. What was the "law" of

* It is interesting to record, some 2,000 years later than the time of which we are writing, the sentence pronounced upon Galileo—just thirty-two years after Bruno had been burned for astronomical speculations that would have passed without comment among either the Greeks or the Romans. "Having seen and maturely considered the merits of your case with your confessions and excuses, and everything else which ought to be seen and considered, we pronounce, judge, and declare that you have rendered yourself vehemently suspected by this Holy Office of heresy in that (a) you have believed and held the doctrine (which is false and contrary to the Holy and Divine Scriptures) that the sun is centre of the world and that it does not move from east to west, and that the earth does move and it is not the centre of the world; and (b) that an opinion can be held and defended as probable after it has been decreed contrary to the Holy Scriptures; and, consequently, that you have incurred all the censures and penalties enjoined in the sacred canons and other general and particular codes against delinquents of this description. . . . And as a warning to others to abstain from delinquencies of this sort, we decree that the book, *Dialogue of Galileo Galilei*, be prohibited by public edict, and we condemn you to the prison of this Holy Office for a period determinable at our pleasure, and by way of salutary penance, we order you during the next three years to recite, once a week, the seven penitential psalms, reserving to ourselves the power of moderating, commuting, or taking the whole or part of the said punishment or penance."

† See Burnett's *Early Greek Philosophy*, and Benn's *Greek Philosophers*.

the change? This was the problem which the Greek thinkers set themselves to solve. Creation and annihilation appears to have been very early dismissed. But if all things were changing, what was the constant, eternal thing which formed the substance of it all? To this question there were returned various answers. It was air, water, fire, space, number, etc., etc. The search was for some principle which would explain the world without the aid of the Gods. It was a direct attack upon supernaturalism; it challenged the very foundations of theology. To develop, the human mind had to be released from the trammels of theology, and as Lange points out, this work of liberation was accomplished by the Materialism of the ancient Greeks.

In passing, we may note a pregnant remark of Lange's in the opening lines of his classic *History of Materialism*. "Materialism," he says, "is as old as philosophy, but not older." That is an apt reminder to those who concern themselves less with fundamentals than with superficialities. One may put the same thing in another way, and say that if we take philosophy to stand for either organized and systematized knowledge, or for a rational principle of unity, then Materialism is an indispensable condition of genuinely scientific thinking. Scientific thought is ordered thought resting upon systematized knowledge and appealing to experience for verification. It must appeal to known facts, and to at least conceivable forces and conditions. There can be no completely rational philosophy of nature otherwise.

An important step forward was taken by Demo-

critus. He is said to have taken his leading ideas from an earlier teacher, but it is from him that Materialism, specifically so-called, dates. He stands forward as one of the leading thinkers of antiquity, and richly deserves a place amongst those of all time. Nothing exists, he said, but atoms and the movements of atoms. Nothing comes from nothing, and nothing is ever annihilated. All we see, in both the inorganic and the organic world, is due to the number and combination of atoms. He took the further important step of asking, not what do the senses tell us, but how do they tell us? Such things as sweetness and bitterness, colour, warmth, etc., exist only as an opinion, or as a modern would say, exist only as sensations. But there is nothing that comes by chance, only through a calculable necessity. He rightly saw that the work of science was to establish the law of the change.

It should be pointed out that Democritus allowed for only one kind of atom. The science of chemistry was as yet unborn, and the many kinds of elements known to modern science had not yet been glimpsed. But that is quite a matter of detail, as is also, so far as the philosophy of Materialism is concerned, his hitting on the atom as the raw material out of which all things are made. The essence of his position was the assertion of a primitive substance out of which all things are formed, back to which all things go. There was nothing left to chance; there was nothing for the gods to do. He saw that the causes of things must be found in the existing forces of nature, and whatever criticism may be passed upon the form in which he

cast his philosophy, the fundamental matter was there. His speculation, with regard to the conditions under which things were formed, was the most fruitful ever made by a single individual in the history of science. Modern science has taught us much about the atom and matter, but it has not seriously disturbed his fundamental principles. And, once enunciated, these principles could never be completely ignored. They remained a power to be reckoned with, and time after time have shown themselves to be possessed of revivifying power.

Through Epicurus, who gave greater literary expression to the teachings of Democritus, and applied his principles to ethics, we reach Lucretius. In one of the most remarkable pieces of literature antiquity has bequeathed to us, Lucretius works out a complete cosmology and anthropology, which excludes the agency of the gods. His picture of human life—

Sprawling in the mire in foul estate,
A cowering thing without the strength to rise,
Held down by fell religion's heavy weight—
Religion scowling downward from the skies,
With hideous head and vigilant eyes of hate.

—is a sufficient indication of the trend of his thought. He avows it as one of his main objects to relieve man of the load of terrors with which religion has burdened him, to enable him to stand erect and give the monster gaze for gaze; and he does this by arming man with a knowledge of himself and of the world in which he lives. His whole arguments are burdened with the refrain that nature does all things of herself and without the aid of the gods. There is no wonder

that priests have loaded his name and that of his master Epicurus with abuse.

But Lucretius reckoned without the Christian Church. With its accession to power the science of the ancient world underwent an eclipse. The more primitive superstitions of the Eastern world were revived under the name of Christianity. The monk took the place of the philosopher, the priest ruled where the scientific enquirer was beginning to grope his way. The Church encouraged no enquiry, and brooked no criticism. Materialism was under a cloud, and the barrenness of thought in its absence was never so clearly shown as during the seven or eight centuries during which the Christian Church larded it over European thought.

What of the Greek scientific thought survived had to be sought mainly outside Christendom—in the more civilized and more cultured Mohammedan world. But as one of many examples that might be given of the extent of the retrogression under Christian influences, we may take the following passage from Hippocrates, written about 400 B.C. He is discussing the nature of epilepsy, a complaint which has been peculiarly associated with religion and religious "illumination," and he says:—

As regards the disease called sacred, to me it appears to be no more than other diseases, but to have a *physis* (*i.e.*, a law) just like other diseases. Men regard its origin as divine from ignorance and wonder, since it is a peculiar condition and not readily understood. Surely then this disease has its *physis* and causes whence it originates, even as have other diseases, and it is curable by means comparable to their cure. It arises like them from things which enter and quit

the body, such as cold, the sun, the winds, things which are ever changing and are never at rest. Such things are divine or not—as you will, for the distinction matters not—nor is there need to make this distinction anywhere in nature, wherein all things are alike divine and all are alike human, for have not all a physis which can be found by those who seek it steadfastly?—(Cited by Professor Singer in *Religion, Science and Reality*.)

In contrast with this, one may fitly place the attitude of the New Testament Jesus dealing with the same kind of affliction, some 400 years later:—

And behold a man of the company cried out, saying, Master, I beseech thee, look upon my son . . . And, lo, a spirit taketh him, and he suddenly crieth out; and it teareth him that he foameth again, and bruising him hardly departeth from him. And I besought thy disciples to cast him out and they could not. And Jesus said . . . bring thy son hither.

And as he was a coming the Devil threw him down, and tare him. And Jesus rebuked the unclean spirit, and healed the child, and delivered him again to his father.

One might suitably call this either Hippocrates on Jesus, or Jesus on Hippocrates, just as one took the point of view of the scientific enquirer or that of the African medicine-man. At any rate one may profitably contrast the attitude of the Christian divinity with that of the Greek physician, and to remember that while one gave his sanction to the demonology that held Europe fast in its degrading toils for many centuries, the other paved the way for the healing art of the sanitarian, the surgeon, and the physician.

My reason for dealing with the early Materialists is to make clear the principles for which they stood, and to exhibit the governing thought in their minds. The principle they were striving to establish was

precisely that which in our own days is known as Determinism, or the Mechanistic principle. It is the principle of determinism applied to the universe as a whole. The fact that Democritus stated it in the form of the atomic theory, ought not to hide the deeper truth. It would have made no difference to the essential principle had he declined to give the raw material of phenomena a name, but had anticipated such later terms such as substance, or the thing-in-itself. But the use of the word "matter" does not in the least prevent the Materialist checking his conception of matter from time to time by such better knowledge as may have been acquired. And it is to the credit of Materialism that in selecting the atom as the basic fact, it offered the scientific world the most fruitful conception given to it for many centuries.

What Democritus said, in substance was, "Give me existence, and I will build a world"; and that is just what sound science has been saying ever since. It is no objection to this to say that we do not know what "matter" is in itself. Later I shall have to examine this word and see what meaning can properly be given it; at present I wish to emphasize the fact that the Materialism of Democritus was one of the phases in the long fight between Naturalism and Supernaturalism, and also that the essence of the Materialistic conception is that all the changes in this world of ours physical, chemical, biological, and psychological, are strictly deterministic in character. The one thing that would be fatal to Materialism would be the necessity for assuming a controlling and direct-

ing intelligence at any part of the cosmic process. Against any such necessity we have the whole force of scientific thought. Science has been able to develop only so far as it has set on one side this primitive anthropomorphic conception and worked as though Materialism were an accepted fact. To put the matter in another way; the essential issue is whether it is possible, or is ever likely to be possible, to account for the whole range of natural phenomena in terms of the composition of forces. That is the principle for which Materialism has always stood. By that principle it stands or falls.

What is clear also, is that the Greeks had really laid the foundations for the development of a genuine scientific study, and had actually reached sound conclusions—many, it is true, no more than mere speculations—but still speculations along substantially the right lines. They knew that the earth was a sphere, had worked out something approaching its correct size, and had speculated as to its being the centre of a system. They had worked out the character of the stars, understood that some were enormous distances away, and had speculated on the possibility of an infinity of worlds. They taught the motion of the earth upon its axis, and the fixity of the Sun. There were speculations as to the evolution of species, some interesting guesses of the origin of certain rocks; they gave us geometry and the beginnings of a science of mathematics. Their speculations on many scientific subjects were both interesting and suggestive, and the power for good resident in them was shown in the way in which the Mohammedans, taking Greek teach-

ing as a starting point, were able to serve as an influence for a revival in Europe centuries later.

So far as Christendom was concerned, for nearly seven hundred years, the human mind was left to tread the weary round of theological word-spinning. Art withered and literature decayed. Freedom of enquiry was forbidden, freedom of thought was impossible. Nothing could be more dissimilar than the Rome of Cicero, or the Athens of Plato, than the same cities under Christian influence. The eager, questioning, criticizing, mental activity of the Greek was forgotten. Science became subservient to one of the most degrading superstitions that ever oppressed the human mind. Instead of the philosopher speculating upon all subjects, high or low, there was the priest delivering the law of the Church, and at his back the executioner and the torturer ready to make men and women pay the price of too free enquiry or too honest speech.

At the Renaissance it was left for Naturalism to do again what it had done centuries before in Greece; and this time it was strengthened by what had been done in Mohammedan Spain. Starting with none of the advantages which the Christian Church had, Mohammedan thinkers had built up a civilization to which justice has never yet been done by Christian writers. Their schools gave to Europe its first physicians, and its first scientists, since the establishment of the Christian Church. For several centuries there was hardly a thinker of note in any of the sciences who had not either studied in the Mohammedan schools or under some one who had studied

there. They had transformed alchemy into chemistry, they had created a science of medicine, a science of optics, and laid the foundations of a scientific astronomy. Their thinkers were perfectly familiar with the conception of natural phenomena as a consequence of the play of purely natural forces.

What it could do to fight the enemy, the Christian Church did. From Roger Bacon to Bruno there was hardly an innovator in any of the natural sciences who did not feel the heavy hand of the Church. Penance, imprisonment, or execution was the reward of anyone who tried to lift from the mind of man the weight of superstition with which the church had burdened it. Later, the Church was compelled to work in a more restricted manner. But opposition was still there. The cry of Atheism or Materialism was still enough to daunt the boldest. Some left their works unpublished, or their thoughts unwritten. Others wrote with obvious reservation and lack of frankness. Even at so late a date as that of Buffon, we find him compelled to recant certain of his scientific heresies. Until about 1820 the Roman Church never officially admitted that the earth revolved round the sun. As late as about eighty years ago the celebrated Robert Chambers was impelled to bind his publishers down to a £1,000 penalty not to disclose the fact that he was the author of the *Vestiges of the Natural History of Creation*. The instinct of the Christian Church has always been sound where its interests were concerned, and it knew quite well that between itself and Materialism there could be no lasting peace or reasonable compromise.

The Church had presented and forced upon the world a fairly compact cosmogony. A small, flat earth, set in the centre of the universe, with stars and planets created for no other purpose than to serve the needs of man; man as the very head of the animal creation, substantially different from it and with a different nature and destiny; the supernatural firmly established; miracles an everyday occurrence; disease, comets, and all sorts of pleasant and unpleasant happenings accepted as evidence of the workings of either divine or diabolic agency, with every species of animal specially brought into existence to play its allotted part. In such a medium the Church stood solidly based, with a mental environment suited to its teachings, because for centuries it had been engaged in carefully rooting out everything of an inimical character.

The shattering of this scheme, with the establishment of the mechanistic conception of nature and of man, represents one of the greatest revolutions in the history of mankind. Geographical discoveries enlarged men's minds as to the size of the earth and the number of its inhabitants. In astronomy, it is difficult for moderns to appreciate the revolutionary effect of the teaching of Copernicus. When he revived the Pythagorean conception and placed the sun as the centre of the solar system, he altered man's whole position in the universe. As Dean Inge has pointed out, it logically took the ground from under many of the Christian teachings and doctrines—a geographical heaven and hell, the ascension of Jesus, etc. The teaching of Copernicus was, of course, banned by the

Church, but it found many champions. Kepler discovered the law of planetary motion, but being without a mechanical explanation, fell back upon that fetish of Sir Oliver Lodge, "Directive intelligence." Later, Newton applied the terrestrial gravitation of Galileo to the whole universe of matter, and showed that the same deterministic principle held universally. Newton was, in turn, attacked for his materialistic explanation, and charged, as was Darwin and Lyell, with attempting to take away from God the control of the universe; and from the religious point of view the charge was fully justified. Every advance in the idea of Mechanism involved pushing the activity of God farther back.

It is, however, curious to find Newton, in attempting to rebut the charge of Atheism and Materialism, illustrating the truth enunciated by Spinoza only a few years earlier, that "God" as an explanation is nothing more than "an asylum for ignorance." Replying to a criticism by Bentley, and dealing with the motions of the planets, he says:—

I answer that the motions which the planets have, could not spring from any material cause alone, but were impressed by an intelligent agent. To make this system . . . required a cause which understood and compared together the quantities of matter in the several bodies of the suns and planets and the gravitating powers resulting therefrom . . . To compare and adjust all these things together . . . argues that cause to be not blind and fortuitous, but well skilled in mechanism and geometry.

Unfortunately for Newton's well skilled geometer-god, it was not long before Laplace, by utilizing the known laws of moving bodies and the dissipation of

heat, was able to explain the structure of the solar system as an inevitable consequent of non-intelligent forces. And, as Laplace said, God was not necessary to that hypothesis. Later still, the reliability and value of the mechanistic principle was shown by Adams and Leverier, who were able to tell astronomers where to look in order to find a new planet—Neptune.

In the early part of the seventeenth century was published Harvey's epoch-making theory of the circulation of the blood, reducing that to a question of pure mechanics. The Royal Society, founded towards the end of the century, avowed its object to be the gaining of natural knowledge, as against that of supernatural knowledge. Physics and chemistry had by this time pretty well got rid of the idea of God altogether. The title of a work by Boyle—one of the founders of the Royal Society—was *The Sceptical Chemist*. Geology followed towards the end of the eighteenth century, with the foundations of what afterwards came to be known as Uniformitism. Investigators such as Hutton, Werner, Humboldt, Sedgwick and Murchisson carried on the same story, and with the works of Sir Charles Lyell, the truth that all geologic phenomena could be accounted for by the operation of known chemical, physical, and thermal forces was established once for all.

Chemistry followed the same path. When Dalton, in 1808, enunciated the atomic theory, he brought back the central idea of the old Greek school, enriched by later knowledge, but the main principle was rein-

forced, and it lay at the root of the tremendous advance made by chemistry during the past century. The principle of the conservation of energy was another thoroughly Materialistic idea.

Finally came the enunciation of the idea of evolution in biology, later to be extended to the whole of existence, organic and inorganic. In this the supernatural has, obviously, no function whatever. The whole of the phenomena of nature, from atom to planet, from the tiniest speck of living material up to man, exist as the consequence of the interplay of forces inseparable from the raw material of existence. If evolution be true, the gods are unnecessary. The conception of a universe, which is self-running up to a point, and then needs a God to intervene and innoculate it with life, is one too ridiculous for serious scientific discussion. Like Laplace, we can say, "God is not necessary to the hypothesis." In the world of modern science the supernatural has no function whatever.

One thing the history of science clearly discloses. This is, that whenever there has been a move towards a better understanding of natural processes, it has been based upon a tacit or an avowed acceptance of the mechanistic principle. How could it be otherwise? An explanation must be in terms of the known. To offer an explanation in terms of the unknown, is not an explanation at all. Explanation involves the establishment of an equation, in such a way that given a, b and c, d follows. And how can one establish an equation if one or more of the factors are not merely unknown, but inconceivable? To think of the un-

known as like the known, is permissible, necessary, and helpful. To think of the unknown as utterly unlike the known, is neither permissible, necessary, nor helpful. That is why, in the history of man, supernaturalism has never enlightened, but always obstructed. In the whole of its history it has never cast the slightest light upon any one of the problems with which the human mind has busied itself. It has not done this because it has lacked the very condition of providing an explanation. To introduce the word "God" is not to explain, but to confuse. "God" is not an explanation at all. It is a narcotic. It lulls enquiry with a phrase, as a dram-drinker lulls anxiety with a dose of his favourite liquid. But the old questions recur, the old problems present themselves, and no answer has yet been found to any of them save on the lines of a scientific Materialism.

I agree with Dean Inge that, "If there are phenomena, whether biological, psychological, or religious, which cannot be made to fit into the framework of Naturalism, Naturalism as a philosophy is overthrown," with only a slight clarification of the sentence. For one cannot but admire the careful confusion of the passage. A given phenomenon may not be fitted into a particular Naturalistic formula, but that also may be, not because the principle of Naturalism is wrong, but only because the formula needs re-stating, just as many a scientific "law," in the light of additional knowledge needs re-casting. Dean Inge's proposition should read: If any phenomenon *contradicts* Naturalism, then Naturalism fails. What Dean Inge asks us to agree with—to have

said it quite plainly would have so exposed the fallacy that even religious readers would have detected it—is that everything shall be explained by Naturalism before it can be accepted. And that is obviously absurd, since it assumes that our knowledge of nature is complete, which is, if possible, still more absurd. An hypothesis is never bound to explain everything before it can be accepted. The only fatal thing is if there can be found facts that contradict it. And it would puzzle Dean Inge or anyone else to produce a single fact that is clearly contrary to the Mechanistic hypothesis.

Finally, it need only be pointed out, that we are invited to throw overboard an hypothesis which has been the only one that has enabled man to build up a science, in favour of one on behalf of which not a single verifiable fact has ever been offered. Pressed for proof, the believer in supernaturalism does nothing but offer us the facts that are to be explained. Life, he says, is here, and we do not know how it came. Intelligence is here and we do not know its cause. But the facts are common property, and to reaffirm the existence of a problem is not to explain it. Even Dean Inge offers nothing in the way of facts. It is not his own knowledge but the ignorance of other people upon which he relies. And that is always a dangerous basis on which to build. For ignorance is shifting, while knowledge is permanent. What a man knows, he knows for ever. But ignorance is, with all, a diminishing quantity. One cannot live without learning, even though one may live without learning very much. But knowledge grows and ignorance diminishes, and

that is the fundamental reason why the belief in the supernatural everywhere undergoes a decline. The history of mankind follows a uniform plan. First the gods who do everything, then their dispossession from one department after another, until they are finally removed to an infinite distance, doing nothing in a world which they once completely controlled. They do nothing where they once did everything. "God" is never more than an hypothesis; and an hypothesis that explains nothing may safely be dispensed with.

CHAPTER IV.

WHAT IS MATERIALISM?

WE are now in a position to attempt a more exact definition of Materialism. Its general meaning should have been clear from what has been said of the part it has played in the history of scientific thought, as well as by the criticisms of some attacks made upon it. Primarily it stands as the challenge of Naturalism to Supernaturalism. Against the operations of nature as being determined by so many independent volitional powers, it asserts the possibility of explaining everything as a consequent of the composition of forces. If natural phenomena can be so explained, or so far as they are so explained, the principle of Materialism is admitted. If we give up all hope of so explaining them, there is then an opening for Supernaturalism. But it would be an opening only. There would still be required positive proof of its correctness.

But of that no proof has at any time been offered. It is not without significance that Supernaturalism has always rested its case upon the assumed invincible ignorance of mankind. In any and every argument in favour of supernaturalism, or Spiritualism, in any of its forms, the whole weight of the argument is made

to rest upon the alleged inadequacy of the Naturalistic or Materialistic hypothesis. Experience never convinces the Supernaturalist that the argument from ignorance is an extremely dangerous one; that experience has a nasty habit of replacing ignorance by knowledge; he returns with an air of assurance to dwell upon the existing ignorance of science, with the unexpressed assumption that this ignorance is irremovable. And while championing a hypothesis on behalf of which no evidence can be offered, or on behalf of which evidence is not even thinkable, he demands the most rigorous demonstration before accepting the general outlines of an hypothesis which is, so far, supported by all the knowledge we possess.

Secondly, the principle of Materialism is synonymous with what has come to be known in the modern world as Determinism or Mechanism. And this rests upon the belief that the state of the world, or of any portion of it, at any given time, is the exact consequence of the distribution and conjunction of forces preceding that moment. No new force is called into existence; no new factor is operative to produce a given phenomenon, whether we are dealing with physics, chemistry, biology, or psychology. Every new phenomenon is the equivalent of a new arrangement of existing forces. If either of these statements are disproved then Materialism is disproved. But if that conception is shown to be unsound, then the possibility of a complete science of nature must be dismissed as an idle dream. It becomes pure illusion, for the whole body of scientific thinking and work-

ing rests upon that conception and upon none other. Science is Materialistic or nothing.

Thirdly, it must always be borne in mind that in spite of the name and the historical connexion, Materialism is not dependent upon a particular conception of "matter." It is the historical function of Materialism that must be considered, not the special form in which the principle of Materialism has from time to time been cast. The conception of "matter" as made up of an infinite number of hard and indivisible points, is still a most useful working conception, however inadequate it may be from other points of view. But at any rate, it stood as the best that science had to offer for many generations, and it is for science to finally decide which is the conception on behalf of which most is to be said. And if it were ultimately shown that "matter" is not what earlier generations thought it to be, but was really a knot in the ether, or some form of electrical phenomena, or that the material atom might be disintegrated into other atoms, this would not affect Materialism in the slightest. Science must settle how we are to think about matter. The Materialist may watch the controversy undisturbed. For, although it may sound paradoxical to those who do not understand Materialism, it is nevertheless the fact that Materialism is not dependent upon "matter" at all. If that much has not been made clear the preceding pages have failed of their object.

Later, I hope to show that a great deal of the discussion about "matter" is a heritage from the long reign of scholastic metaphysics. People have assumed

that apart from the world given in consciousness, there is some other world of which we may acquire knowledge, and which has been dignified by the name of "Reality," as against the known world, which became, by implication, transient and illusory. Under various names, the Ideal, the Noumenon, the Thing-in-itself, the Unknowable, etc., and set out in all the impressive panoply of capital letters, this has proven itself to be a veritable bugbear in the history of philosophy. It is a most extraordinary thing that the world we do know should be dismissed as illusory, while a world of which we know nothing whatever, of which we never can know anything, and of the nature of which we cannot form the slightest conception, is accepted as the one enduring "Reality." I do not wonder that theological philosophers have clung to it with such desperate affection. A world beyond knowledge, is a world beyond criticism, and a thing which is beyond knowledge and criticism is a truly ideal foundation upon which to build a theological system.

A genuine Materialism is committed to none of these metaphysical nightmares. We are concerned with the world we know, and with none other. Modern psychology has at least made this much quite clear. The sole concern of Materialism is the establishment of the principles enunciated above. And once the principle that natural events are the consequence of a composition of natural forces is seen and applied with a moderate degree of logical acumen, the confusion that has gathered round the subject disappears. We are freed from the confusions of the Metaphysical

Spiritualist and from those of the metaphysical Materialist. Both are left floundering in a bog of their own creation.

We have to beware of both orders of confusion; to be as suspicious of those who invoke "matter" and "force" in much the same way as the religionist invokes "God" as we are of those who tread the nowhere leading road, or use the meaningless jargon of "Mysticism" and bastard metaphysics. The medieval habit of regarding words as the equivalent of things must be avoided at all costs.

But it is not easy to put the right meaning of "matter" in such a way as shall be crystal-clear to the non-philosophical reader. Indeed, a full discussion of it would involve such questions as "How do we get our knowledge of things?" "How far are sense perceptions reliable?" The whole subject of epistemology would have to be thrashed out, and in the end the very complexity of the subject would prevent many getting a clear view of the matter. And the plain man has very little appetite for such discussions. In this age of cheap journalism, with many widely circulated journals serving him up prepared views of life in tabloid form, he is apt to regard philosophical discussions as of no practical value, even though it might easily be shown that in every one of his expressed opinions he is assuming a determination of the issues he declines to discuss.

I will try to be both simple and precise; and may commence with the plain and simple statement that "matter" is no more than an hypothesis—that is, a conception framed to express one aspect of human

experience. The plain man has no doubt that the world exists outside his consciousness of it exactly as he sees it. And he proves it, exactly as the great Dr. Johnson tried, in his ignorance, to disprove the thesis of Bishop Berkeley, by kicking the ground to show that it existed. Of course, Berkeley never denied that the ground existed, or that it gave one the sensation of solidity, or that you could not stamp on it. But the attitude of Dr. Johnson is the attitude of the man in the street. To him the world exists as he sees it. Matter is one thing, mind is another, and he will tell you he knows both quite well, when, in fact, he knows nothing worth knowing about either. And as is so often the case, self-satisfied ignorance can only be removed at the cost of an amount of patient study that few are inclined to give to the subject.

Now we can make at least a commencement with the statement that the world we know—our world—is a world of experience. By that I mean that all our knowledge of the world is derived from experience, immediately by the individual, remotely by the accumulated experiences of all the generations that have gone before us. Of a world that lies outside that experience we know nothing, and can conceive nothing. We cannot even think of such a world. It is true we can think of all sorts of curious things, such as never have happened, and never could reasonably happen. We can think of men half a mile in length, of animals with the bodies of men, the heads of lions, the feet of a bird. There is nothing too extravagant to form the subject of thought, but however extravagant these pictures may be, they are only recombinations

of actual experiences. We have only taken our experience to bits, so to speak, and put the pieces together in a haphazard manner.

This is, in fact, no more than a statement of the essential condition of thought. We may think of things that are unknown, but we must think of them in terms of the known. A traveller setting out for unknown lands, may reasonably expect to discover many new and curious forms of both animal and plant life, but whatever the colour, or shape, they will be no more than variations of the fauna and flora already known. In brief, to think, we must have the material for thinking; and we cannot think outside the range of human experience because, first, the mind has been built up by experience, and second, because it is experience alone that can give us the material of thought.

The next clear step is that the world of experience is the world as presented in consciousness. One of the earliest and plainest divisions of this world is into that of an outside and an inside, a me and a not me, an objective and a subjective existence. In the one category we place a number of experiences—heat and cold, pleasure and pain, the sensation of taste, etc. In a very special sense these belong to *me*. I do not mean by this that others have not the same kind of experiences, but they are not mine. They may have this kind of experience while I am without it, or vice versa. Their experiences are like mine, but they are not mine.

In the case of the other set of experiences I have no such sense of personal possession. The table at which

I write, the room in which I sit, the garden that can be seen from the window, the "whole choir of heaven and furniture of earth"; of none of these can I assert the same close sense of personal possession. They are not part of me. I do not question that so far as my sensations are concerned they will cease to exist when I cease to be. But I do not assert that the table or the room or the garden will cease to exist when I am no longer conscious of their existence, or that because I may die in May there cannot be an eclipse of the sun in June. I say that these things have an objective existence, because, among other things, other people feel about them exactly as I do. Bring a dozen people into the same relation with the room in which I sit, and they will feel about it much as I do. These things persist in a way that my feelings do not persist. One distinguishing quality of objective existence, therefore, is that of persistence.

A second quality is that of a capacity for offering resistance. If I press against the table it offers resistance to my sense of touch. Indeed, the action of every one of the sense organs—taste, hearing, smell, sight—may be reduced to this sense of resistance. Touch appears to be the mother sense, of which all others are modifications. Finally a third quality of objective existence is position in space. Where one thing is, another is not; there are definable boundaries to every object of which objective existence is predicated.

Associated with the sense of an objective existence there is, therefore, persistence, resistance, and a position in space. It is considerations such as these that

led Sir Oliver Lodge to define matter as the sum of resistance, Spencer to say that the ultimate fact in consciousness was the persistence of force, and John Stuart Mill, in discussing the subject from a more subjective point of view, to define matter as the permanent possibility of sensations.

But this division of experience into an inner and an outer does not lift us beyond consciousness. Our knowledge of the world must lie within the world of consciousness for the simple reason that we cannot get outside it. The world we know, the only world of which we are conscious, and of which we can form any idea whatever, is the world that reaches us through our sense organs. To discuss what a world outside consciousness is like is sheer waste of time, even though one could perform the miracle of making such a discussion intelligible. It is certain that if I had been born blind the table before me would never have been known to me as an object having a bright surface, but only as one possessing hardness and shape. If I had been born without a sense of touch, but possessing sight, the table would have appeared as a shining object only, but not as a hard one. And what is true of each of us individually, is true of all of us taken together. The world is to us the world of which we are aware; and our awareness is at every stage conditioned by the nature of our sense organs. Concerning this there can be no reasonable dispute.

What I am really trying to do here is to fix a reasonable meaning to such terms as "matter" and "externality." We all use these terms, it is difficult to

see how we can avoid using them, since they represent basal facts in our mental life. There must, therefore, be a reasonable sense in which the terms may be used, or sane thinking becomes impossible. And it appears to me that the best way of doing this is to reverse the usual procedure, and instead of asking how does the external world make itself known to us, to ask what is it we know about an external world, and what do we imply by the use of such an expression. In this way we take nothing for granted, but enquire at each step what is it we know, and what covers the words used.

So far we have seen that externality, matter, is primarily a fact of consciousness. We experience a particular sensation, and we take that particular feeling as an indication of externality, in order to mark it off from other sensations to which we do not give that characteristic. The procedure is really one of grouping. At any rate that is all that is properly implied when we speak of "matter," or "objective existence." If this method of determining the connotations of words had been universal, a great many of the difficulties with which the history of philosophy bristles would never have arisen. Instead of this being done words have been given arbitrary meanings, and they have then been argued from as though they were unquestionable truths.

Now, as a Materialist, I call this external existence "matter." But, as a Materialist, I am also quite willing to call it by any name that may be found more suitable, or even to refrain from giving it any name at all, but merely refer to it as X. And it will not affect

my Materialism in the slightest degree.* It is the mechanistic principle, the possibility of explaining the world as a consequence of the composition of forces with which, as a Materialist, I am concerned. The ultimate nature of existence has nothing whatever to do with it. What matter is, how we are to regard it, whether we are to conceive it in this or that form, are all questions for current science to determine. As I have said, it is a mere historical accident that Materialism should have been tied up with a particular conception of matter and the atom. But the shattering of our conception of the nature of the atom or of matter, is, to Materialism, of no consequence whatever.

Do I then deny the reality of matter, or of an external existence? Not at all, so long as either expression is used in a reasonable manner. In science "matter" is an hypothesis, used as other hypotheses are used to help to an understanding of the world around us. It performs the same function in one direction that the ether does in another, and science is ready to discard either or both, just so soon as a more satisfactory hypothesis can be framed. "Matter"

* It is astonishing to find a man such as the late Sir Leslie Stephen, although in this connexion he is one of a rather numerous party, taking Materialism to be solely concerned with physical matters. Thus, "Materialism, we may say, represents the point of view of the physical enquirer. A man is a Materialist for the time being so long as he has only to do with that which may be touched, handled, seen, or otherwise perceived through the senses." (*An Agnostic's Apology*, pp. 129-30.) This is, of course, the vulgar view of Materialism, but it is quite wrong. Sir Leslie here commits the common error of permitting his opponent to state the case for him, and then accepting it as stated. It should have occurred to Sir Leslie Stephen that unless Materialism is able to give a satisfactory account of pure feeling, it must admit its inability to rank as a satisfactory hypothesis.

is real in the only sense in which "reality" has a meaning. When, for example, I say that the table is objectively real, I do not mean that the table as I am conscious of it exists apart from my consciousness. I mean that it appears to other people in substantially the same form as it appears to me. If they take up the same position as I take up they will see the table as I see it. This is all that is implied when we speak of objective reality.

On the other hand, the perception of the table may excite in me very different feelings from those it arouses in another onlooker. I may find the colour unpleasant, the shape distasteful, and so forth. But these feelings may be peculiar to me, and for that reason I say they are subjectively real. Reality is predicated of both sets of feelings, but it is an objective or a subjective reality as it is peculiar to my organism, or common to the organism of myself and others. The whole confusion here has arisen in the crude assumption that reality must mean something outside consciousness, instead of being a name for one of the categories of consciousness. What exists outside consciousness we shall be able to determine only when a man is able to pick himself up by the waistband of his trousers and carry himself round the room.

With other aspects of this question I deal later. At the moment this would seem a suitable place at which a word might profitably be said as to the confusion which gathers round such a word as Agnosticism. Properly the word has a very restricted application. Popularly, it is applied very widely. It has a great vogue with a number of people who obviously shrink

from avowing Atheistic opinions, and who, to avoid the charge of Atheism seize on Agnosticism, and apply it to the God idea, in which connexion it has not the slightest relevance. In philosophy, granting the legitimacy of certain assumptions, Agnosticism has its place; in religion and in relation to the God-idea it has no place whatever.

Generally speaking, the philosophical question develops along the following lines. To begin with, there is the crude realism which assumes that the world outside consciousness exists exactly as we see it. It is hot or cold, dark or coloured, heavy or light. The image we form of it is an exact copy of what exists apart from our sense organs. The next stage is an enquiry of how we get our knowledge of the world. The obvious reply is, through the sense organs. But is the testimony of the senses reliable? Obviously the senses can only register the sensational effect of existence, they cannot tell us what it is like apart from sensation. So by analysis after analysis the conclusion is reached that while an external world may be inferred, it is no more like the cluster of sensations we have relating to it, than the sensation of heat resembles the blazing coal of which it is the consequent. Thus arises the problem of the nature of ultimate existence, and the conclusion that while an external world may be inferred as the cause of our mental life, what that something is we do not know and cannot know, so long as knowing is conditioned by the structure of the sense organs.

Now, provided we admit the correctness of the preceding steps, here is a region in which a profession of

Agnosticism is quite legitimate. That is, we assert the existence of something, but deny the possibility of any knowledge concerning its nature. There is something here of which we may be ignorant about. Ignorance concerning the nature of a thing must clearly rest upon the assumption that that thing exists.

The belief in God, in relation to which Agnosticism is commonly asserted, begins in an entirely different manner, and rests on a quite different foundation. Belief in a God is in no way concerned with the mere fact of something existing. Existence, as such, is a common datum with all. The belief in God is an assertion concerning the *nature* of an existence, the believer claiming to know sufficient of its nature to give it certain very definite characteristics. It has intelligence, will, etc. Of course, not even a theist contends that he knows all about God, but he does contend that he knows enough about him to justify some kind of delineation.

But in the course of human development, the belief in God weakens, while philosophy, with its criticisms of the nature and extent of our knowledge, occupies an ever-growing sphere. And it happened, partly by accident, partly by design, that the two questions became confused. The philosopher, often to escape attack from theology, has allowed his "existence" to become identified with God; the theologian, because it helped to protect his anthropomorphic conceptions from criticism. Both have talked at large about God being the ultimate existence, when in truth "God" never has meant that and never can mean that.

But the Agnostic does not profess to believe in the

existence of a God, while professing ignorance of what he is like. He says he is ignorant of the existence of a God. He knows nothing about him, and asserts that no one else knows anything about him. Of what then is it that he professes to be in ignorance? What is he agnostic about? If the nature, but not the existence of God, the proper name for him must be found in one of the many shades of theism. If he is without knowledge or belief in the existence of God, then the proper name for him is Atheist. It is simple nonsense to say I am Agnostical concerning something which I do not believe exists. And one really does not profess suspended judgment on the proposition that two and two make five. A genuine Freethinker does not say, I am willing to assume the existence of a God, but I am quite Agnostical about his nature. He says, I do not believe in the existence of a God, and therefore have nothing in that connexion about which to profess Agnosticism. A moderately careful consideration of the nature of the religious and of the philosophical question should serve to keep the two distinct.

CHAPTER V.

SCIENCE AND PSEUDO-SCIENCE.

BY this time it should be clear to the reader that very many of the difficulties connected with Materialism arise from the way in which the subject is stated. A question that is not properly put cannot be satisfactorily answered. Instead of first of all determining in what sense science uses the term "Matter," an arbitrary definition has been laid down. The anti-materialist has set about demolishing something that never ought to have been set up, and the Materialist has busied himself in defending positions he was not at all concerned with.

To illustrate what is meant one may take the function discharged by the conception of a universal ether. One still meets with those who write and speak as though something was actually known about the ether in the sense that we know and can verify the existence of Jupiter's moons. The truth here is that the ether was actually *invented* to make certain things that were known to occur understandable. How, for example, is light transmitted to us from the Sun? If there is nothing between us and the Sun but absolutely empty space, we lack a medium of transmission. We are then up against the difficulty of conceiving action at a distance, or of seeing how light

waves can cross absolutely empty space. But, it was said, if we assume that between us and the Sun, in fact, filling all space, there is a continuous jelly-like substance, waves of light may be transmitted through this, and we have a reasonable explanation of what occurs. It was in this way that the ether came into existence and established itself in science. It is not, as a matter of fact, the only hypothesis on the subject, and if any other worked better than that of the ether, this one would be discarded without the slightest hesitation.

The only reason we have for assuming the existence of the ether is its utility. It was invented in order to work, and it is accepted because it works. And that is precisely the function of "matter" in the world of pure science. It is a conception that helps us to explain things as nothing else does. So far as Materialism is concerned, it would make no difference if this particular conception was discarded and some other better working one established, so long as the mechanistic principle remained unaffected. The whole function of a scientific hypothesis is that of helping us to understand, to form some kind of a mental picture of what occurs. Hypotheses are conceptions that are adopted when they are seen to work. A certain number of observations are made and classified. Then, it is said, if we assume such and such to be the case, such and such events should follow. If the events fulfil expectations the hypothesis is accepted as correct. That is the part played by all scientific hypotheses. They must help us to explain what *has* occurred. They must enable us to predict what *will*

occur; and they must not contradict a single known fact. In science the exception does not establish a rule, it proves the rule to be untrustworthy.

But the religious mind loves a mystery. It feels that in a world where things were understood there would be no chance for the supernatural. The old lady who professed unbounded admiration for the sermons of her favourite preacher, but declared she would never be so presumptuous as to pretend to understand him, is fairly typical of the religious frame of mind. Hence the universal practice of religious advocates to stress the immediate ignorance of science in certain directions, and the indestructible ignorance of mankind in others. Thus Prof. J. A. Thomson, in his little book, *Introduction to Science*, has a whole chapter dealing with religion and science, the entire burden of which is that religion begins where human ingenuity and knowledge is baffled—that is, it is a kind of narcotic to which a number of people fly for comfort as others resort to alcohol. Religious phenomena, he adds, “like tender plants drawn out from shadowy recesses, wither quickly in the glare of common day.” Read common sense for common day, and we have the case in a nutshell. It is not the less amusingly significant that Professor Thomson is only kept from seeing the fatal admission contained in that sentence by using an image which serves to prevent his appreciating all its implications.

So when it is realized by the supernaturalist that the mechanistic conception is steadily establishing itself, one is not surprised to find an attempt at consolation in the assertion that; after all, there are still

left fields of apparently irremovable ignorance, in which all kinds of useless and unnecessary fancies may disport themselves. We are told that we do not know what matter is "in itself," or what electricity is in itself, or what this mysterious force of gravitation is in itself, the implication being that if Materialism can be driven back to ultimate ignorance, there is some chance for Supernaturalism. Spinoza's equation of the will of God with the asylum of ignorance once more receives justification.

It is idle asking what is meant by "matter in itself," because as nothing can be meant, no answer to such a question is possible. When we speak of matter, the matter we have in mind must be the matter we know as a grouping of certain sense experiences, to distinguish them from other groupings of our conscious life. We must mean just that and nothing more. If it is said there is something beyond this, there is no need for anyone to deny it, only it is not the matter to which reference is made, or with which science deals. And if it is not that, then it is not matter, but something else. So with the other things named. Science does not ask us to believe in something which we call gravitation or electricity, and then in a further unknown something which is the real gravitation and the real electricity. In a loose but convenient way we speak of a stone falling to the ground as a consequence of gravitation. But strictly speaking, the stone falling to the ground *is* gravitation. Gravitation is a general term to express the observed fact that the movements of matter may everywhere be definitely measured and described. We do know gravitation "in itself," be-

cause gravitation is nothing more than the movements of matter reduced to an exact descriptive formula. The proof of this is that if we abstract in thought these movements of matter, gravitation disappears. There is nothing left to know.

What is true of gravitation, is true of electricity, of life, of mind, of every generalization framed to describe natural phenomena. These are classified as physical, chemical, biological or psychological, as the characteristics of each enable them to be arranged in groups. The laws of chemistry are descriptive of one group; the laws of biology of another group, and so forth. So far as we are concerned the thing in itself is the thing covered by the term used—that is the phenomenon we know. If electricity, gravitation, etc., are not the things we know, what, in the name of all that is reasonable, are they? What is a gravitation that does not correspond with what we mean by gravitation? or electricity that does not agree with what we mean when we use the word? Any man is at liberty to call black white, but he is not at liberty to insist that when he does so he is naming the same objects that another person names who follows the normal procedure.

It is curious to have to thus labour the simple truth; if things are not the same they are different and if they are different they cannot be the same. Yet that is all we have just been trying to establish, and a careful reading of a large number of books on scientific or philosophic subjects, written by men of standing, will soon prove how necessary this is. I am quite aware that I shall have added to my offence in

making this much plain by doing it in simple words, instead of wrapping it up in involved and technical language that is far more likely to add to the mystery than to clear it up. But what has been said may serve to illustrate the wholesome truth that an ounce of understanding of the methods of science, and of the principles of scientific reasoning, is worth a ton of such facts as the number of the stars, the size of Jupiter's moons, and such-like collections with which ordinary people are deluded into the belief that they are receiving a scientific education. Moreover, a great many of these metaphysical difficulties are perpetuated because so few will trouble to ask themselves what the bother is about, and will not take the trouble to think the questions out for themselves. In saying this, I am not thinking wholly of the man in the street. A very slight independent study of the history of philosophy will show that once a well known writer has wrongly stated a problem, those who follow go on stating it in the same way, or dealing with the misstatement, without ever asking the important question whether the question asked is one that ought to be asked, or, if it is, whether it has been rightly put. It is not only the ordinary man whose thinking runs in grooves. It applies to leaders in science and philosophy. The difference shown is not that of running in or out of grooves, but that the grooves followed exist on different levels.

There is a curious but interested impression abroad that the Materialist is either bound to explain life and mind in terms of physics and chemistry, or else to ignore them altogether. Thus we find Professor

Arnold—one among many—saying in his *Scientific Fact and Metaphysical Reality* :—

Materialism is the most uncritical of philosophies, but it is in one respect often like a true theory of existence as a whole; that is, it tends to be of an analytic character, though stopping short of a full analysis . . . Materialism takes as its basis one of three types of existence . . . and practically it omits the other two.

If this were true, Materialism would not be merely uncritical, it would be sheer fatuity. Writers who deal with the subject in this fashion might at least pause to ask themselves whether it is possible that Materialists are so stupid, and so blind as to ignore the existence of mental life and its need for an explanation.

Materialism no more ignores mental facts than it ignores physical ones. It has a place for both, attaches a meaning to both, and offers an explanation of both. That explanation may, of course, not be acceptable, but it is certainly there. And if it cannot offer a complete explanation of all we see, it only suffers under the disability with which all human knowledge is afflicted. All that is claimed here is that the explanation whenever found will be along mechanistic or materialistic lines.

In another direction we have a man such as Professor Needham, the eminent bio-chemist, remarking, as a fatal objection to Materialism, that "Mental processes cannot possibly receive explanations or descriptions in physico-chemical terms," a statement with which I, as a Materialist, cordially agree. There is also the triumphant declaration of Sir Oliver Lodge that, "to explain the psychical in terms of

physics and chemistry is simply impossible." Similar comments might be multiplied indefinitely, but all I am desirous of doing is to note the various kinds of objections that are brought against Materialism. It must be admitted that in this instance, both Professor Needham and Sir Oliver Lodge might point to Materialists who have endeavoured to perform the impossible. Thus one professed Materialist replies to Sir Oliver's statement, "Why not?" and even in the case of Mr. Hugh Eliot, we find in his *Modern Science and Materialism*, the statement that Materialism denies "any form of existence other than those envisaged by physics and chemistry," and the setting down of the proposition that "those events known as mental processes . . . are expressible purely in terms of matter and motion." With defences of Materialism such as these, one may well feel sympathy with the words of an Eastern potentate, "Allah save me from my friends; I can look after my enemies myself."

The proper reply to Sir Oliver Lodge and to his kind of criticism is the question, why? Why should physics and chemistry explain everything? If they could be so explained, what need is there for either a science of biology or psychology? Why should the Materialist be called upon to explain an emotion in terms of chemistry or physics? I do not envy anyone who tries to accomplish the task. It is one thing to show the physical conditions of a sunset; or that accompanying every mental state there is a corresponding movement of some portion of the nervous system. But when that is done the sensation remains

an ultimate fact, as a sensation. The physical equivalent of a sensation of redness is a vibration impinging on a sensitive surface, but one cannot explain redness as a mere physical action. The two things simply cannot be identified in thought.

It is not, therefore, those who in the name of Materialism, rush in to defend a position they never ought to attempt to defend, who are in the right, but their opponents. Sir Oliver Lodge is quite right in saying that Materialism, *as he states it*, breaks down, but the fault does not lie with Materialism, but with his statement of Materialism. Moreover, in so stating it, he has ignored a very important aspect of the methods and function of science. As a mere elementary scientific truth, it does not follow that if we state the factors of a compound, we must be able to describe the qualities of a compound in terms of the qualities of its constituents. We may say that the elements of a biological compound are physical and chemical; or that of a psychological fact, biological and chemical; but we are not in the least committing ourselves to the proposition that we can, therefore, explain psychology in terms of biology, or biology in terms of physics and chemistry. The mere fact that science is compelled to describe some things as physical, others as biological, and yet others as psychological, is enough to show that they belong to different categories, and so need a different set of terms to describe them. This should be clear to even laymen, still more so to leaders of science. Sir Oliver Lodge and others overlook the obvious fact that if things are different they cannot well be the same,

and if they are the same there is no need whatever to have a different set of words to describe them.

It is not difficult to kill a proposition that is carefully fashioned for slaughter. But, unfortunately, it is much easier, at all events it takes fewer words, to state a fallacy than it does to expose its nature. And the peculiar fallacy involved in the statements under notice, places the anti-materialist at some disadvantage. The anti-materialist can appeal to established prejudice in familiar language, and assent calls for no great mental effort. Disproof requires a rather careful consideration of scientific principles, and this only a few are willing to give. Still the task must be attempted if the Materialistic position is to be made quite clear.

Thoroughly to expose the particular fallacy under examination would mean a very lengthy disquisition on the meaning of "cause" and "law" as used in science. Both have led to endless discussions, and the length and number of these may be taken as evidence of the confusion prevailing. With the meaning of causation I deal in detail in a separate chapter, only touching the subject here sufficiently to make the position plain.

It is a sufficient reply to those who say that Materialism ought to be able to explain everything in terms of physics and chemistry to say that if this were so "laws" of biology and psychology would be quite unnecessary. The existence of these laws is enough to prove there is something wrong in the statement. Consider the facts. We are surrounded by all sorts of happenings, and one of the first steps

towards understanding them is to reduce them to some kind of an order. This is done, in the first place, by groupings. Phenomena showing a certain number of characteristics in common are brought together, and a formula, or "law" devised that will express the qualities they have in common.* To describe certain properties we frame laws of physics. But at a certain point we find that our description does not cover all that is before us, and we frame laws of biology; later, we have laws of psychology, etc., etc. But it should be quite clear that the only reason for framing laws of chemistry is that laws of physics will not describe all that occurs. Similarly, the impossibility of describing other phenomena in terms of physics or chemistry necessitates the devising of new laws. The existing ones are not superseded, every one of them may be found illustrated in the movements of the human body; it is simply that in the grouping of phenomena, according to certain general characteristics, new formulæ must be devised to correctly describe these characteristics.

But having said this, it does not follow that the later "laws" are independent of the earlier ones. It is a commonplace of scientific method that physical phenomena give the condition for the appearance of chemical phenomena; chemical and physical phen-

* General language uses such expressions as, "the world is governed by law," "nature moves according to law," etc., etc., as though a law of nature were some objective fact. As a matter of fact, laws of nature are not discovered by man so much as they are made, or devised, by him. A law of nature is a formula devised by man to express his experience of things. It is well to bear this consideration in mind, as so much of the case for supernaturalism rests upon a misunderstanding, or an overlooking of this fact.

one ma the condition for biological phenomena; physical, chemical and biological, for the appearance of psychological phenomena. Every scientist is bound to assume in his work that the cause for the existence of the later and more restricted group of phenomena is to be found in the existence of a wider and earlier one. There is not a scientist in the world who, if looking for the cause of psychological facts, would not seek it in biological, chemical and physical ones. To think of the former in the absence of the latter is a sheer impossibility. It would leave the mind a blank. Thus the only reason why new laws are framed is that existing ones are found to be inadequate. Laws of psychology are created because laws of chemistry, physics and biology will not cover the existing facts. That is why I say that Professor Needham, Sir Oliver Lodge and others are hopelessly unscientific in saying that the Materialist must explain psychological facts in terms of chemistry and physics, as are those who foolishly accept the challenge and attempt to prove the scientifically impossible.

In passing, I may note, that if the above statement be accepted as correct, it must follow that the search for the cause of a given phenomenon resolves itself into the search for the conditions under which that phenomenon occurs. I will deal at length with that when I come to treat of the question of causation; for the moment I would ask the reader to bear this fact in mind, a fact the ignoring of which has led to no end of confusion, even with leading writers.

To return to the correct understanding of the function of "law" in science. If we arrange laws of science in a certain order, we find that the widest are what are known as laws of physics. The laws of chemistry are more restricted in their application. Still more restricted are those of biology, while the most restricted of all are those of psychology. If one group arises from the other this is precisely what we should expect to find. And the vital difference here between the Spiritualist and the Materialist is that while the latter stands the scientific edifice upon its base, the former insists on standing it upon its apex. He derives the earliest from the latest, the most simple from the most complex, instead of the other way about. The Materialist insists that we must look for the emergence of new phenomena from phenomena previously existing. To him, nature is a changing whole, and the unity of the whole remains no matter how great the internal changes.

And, however produced, a biological or a psychological fact, once there, remains a fact distinguishable from other facts. A brick striking a man on the head may, so far as the motion and the impact of the brick are concerned, be described in terms of pure physics. But it does not follow that, therefore, we can explain the vision of stars which the man experiences, following the impact, in terms of physics also. You may give the physical and chemical conditions of a sunset, but our feelings arising from the perception of sunset belong to an entirely different category, and to explain them we must refer to a different class of "laws" altogether. You can reduce a psycho-

logical fact to the chemical and biological conditions from which it springs, but in doing so you have destroyed its character as a psychological fact. And no one in their senses would look to find in analysis that which is produced only by a synthesizing of the factors.

Once again I am explaining only that if things are different they cannot be the same. Sir Oliver Lodge and others appear to claim that if things are different they ought to remain the same—at least, that is what he makes the Materialist say, and seems to think that this is a correct reading of the Materialistic position. But I can assure everybody interested that one who understands, not merely Materialism, but scientific method, is not quite so absurd as to attempt to explain difference in terms of identity. The Materialist does not say that you must be able to describe life and mind in terms of physics and chemistry. What he does say is that inasmuch as life and mind are never found apart from certain physical and chemical conditions, we must seek for the cause of their emergence in these conditions. It is quite true that our present knowledge of these conditions is not exact enough for us to say exactly how the passage from one form of existence to another takes place, but that is never more than a confession of ignorance. To say that life gives us something different from anything present in the most complex chemical phenomenon is quite beside the point, since if it did not we could not tell one from the other, and this is a common experience in causative changes. There is no taste of sweetness in carbon, oxygen, and

hydrogen, but from a combination of the three we get sugar. To look for life in chemical substances because we see life emerging from chemical conditions is scientifically absurd. Every fresh combination gives new qualities, new properties, and the Materialist is arguing from experience when he says that we must seek in the direction indicated for the origin and explanation of life. If we are not to seek here, where shall we look? To assume that life is an expression of some new force, without any organic relation to other forces, is a quite inconceivable proposition, and can only commend itself so long as one does not seriously think out all that is involved in its terms.

At the risk of being thought tedious, I must again emphasize the fact that a search for the cause of anything is never more than a search for the conditions under which that thing occurs. When we have discovered this much, we have discovered all that is scientifically involved in an act of causation. We simply record the observed fact that whenever a certain assemblage of conditions occur, a particular result follows. It is not a question of *why* this should be so, but simply the perception that it is so. I do not know why the union of oxygen and hydrogen should be registered by the appearance of water, or why that of oxygen, hydrogen, and carbon by sugar. But we do see one as a result of the other, and we take the fact of causation as established. In the case of life and mind, the conditions are far more complex, and so more difficult to determine, but exactly the same thing holds. When we have com-

plete knowledge of all the conditions attending the appearance of life and mind, we shall know all there is to know about them.

That this is not clearly seen is very often due to the manner in which the subject is approached. To ask, as does Sir Oliver Lodge, how consciousness becomes *associated* with matter, or in what way life *controls* matter, is inevitably to suggest that we are dealing with two things, independent in themselves, but brought into association for a longer or shorter period. It leaves no room for the counter consideration that we are probably dealing with a new collation of forces, which of necessity results in the appearance of a new quality or set of qualities. The Materialistic hypothesis is ruled out in the way the equation is stated. Put in the same way, in every case science would have to return to the essences and principles of medieval scholasticism, when mere words took on all the qualities of things. If, for example, we were to act in an identical manner in a question which is admittedly one of physical science, and to ask in what way wetness becomes associated with oxygen and hydrogen, we might well see reason for believing in the existence of some principle of aquosity. We do not ask in what way light becomes associated with vibrations, we simply treat it as a phenomenon accompanying certain rates of vibration. The search for the origin of life is the search for those conditions under which the phenomena of life appear. This point cannot be too strongly emphasized. Disinclination to admit it, and the fear of incurring the charge of Materialism is responsible for much need-

less confusion. Not so long ago there was the same timidity on the part of many scientists to admit that living matter arose from non-living matter. To-day there is hardly a biologist of repute who would question that as a theoretic necessity. But there is the usual disinclination to take the final step, and to assume that in the same way as the living develops from the non-living, so mental phenomena have their roots in phenomena that are not mental.

Two very striking instances of this may be noted. The first is from an essay on *Religion and Science*, by Professor Julian Huxley, in his *Essays of a Biologist*. All developments in evolution, he tells us, can be traced back and shown to be specializations of one or more of the properties of living matter, but, although "there can be no reasonable doubt that living matter in due process of time originated from non-living matter" yet, in spite of the fact that we can trace mental phenomena back to a stage in which it is impossible to distinguish them from "physiological reactions," we must assume that all matter has associated with it "something of the same general description as mind in the higher animals." Why? Why should we suddenly stop short of the perfectly natural and logical conclusion that mind arises in the same gradual way as life, and rush to the unwarranted one that "mind" must, as mind, have existed independently of matter, although always in association with it? I can see no reason whatever for this except the disinclination to incur the odium of Materialism.

A second example is from a more recent work on

Holism and Evolution, by General Smuts. In the process of evolution, we are told :—

The lower unit always becomes the basis of the higher unit, becomes as it were the stepping-stone to the next stage. Thus the earlier simple structure of the atom becomes the unit for the molecule; the molecule for the crystal; the complex of molecules for the cell; the complex of cells for the higher organism; while the still more complex groups of cells become the units for higher psychic or personal structures . . . But while this newness, this creative novelty arises everywhere, it is at two stages in particular that something utterly new and wholly different in kind and nature arises from the union of pre-existing elements; these are the stages where so-called life and mind appear.

So again, instead of carrying on the evolutionary process to its logical conclusion, and treating every new appearance in the same way, we have a quite arbitrary and wholly unnecessary distinction made in the case of life and mind. At all costs, life and mind must not be identified with natural processes as a whole.

Often it is said that the Materialist looks upon life as a property of matter. That is not quite the case. What the Materialist says is, that life is a function of organized bodies, which is not quite the same thing. Again, the Materialist is called upon to show in what way life and mind are connected with animal organization. But the connexion is already there; it is patent to all. It is a fact of universal experience that can be denied by none. It is for they who assert that life and mind are independent of organization to show in what way they can exist apart from matter. Seeing that A and B are never found apart, that

every change in the one is accompanied by a change in the other, it is surely the task of those who make the assertion to show how they can be separated.

The Materialist rests upon an admitted fact, and relies upon a sound and proved method of investigation for further knowledge of the fact. Certainly something more than our inability to fully answer all the questions put by an impotent and disguised Supernaturalism would be necessary to warrant the relinquishing of a principle, and the discarding of a method that every advance in positive knowledge has illustrated and enforced.

CHAPTER VI.

THE MARCH OF MATERIALISM.

I AM reserving for a couple of concluding chapters a discussion of Causation and Personal Identity, two questions which, it is often said, are fatal to a consistent Materialism. They might have been dealt with earlier, and from the point of view of strict logic ought to have been, but there are times when the logical order is not always the better one, and this would seem to apply to the present discussion.

What I have been anxious to do is to keep the mind of the reader on certain general principles, so that the central issue between Materialism and its opponents might be clearly realized. For the same reason I have not been desirous of overloading these pages with detailed examples of scientific fact in support of Materialism, lest by so doing it became difficult to see the wood for the trees. Half the haziness abroad concerning what science actually teaches is due to the fact that we have fallen into the mistake of identifying the mere acquisition of knowledge for an understanding of science, instead of taking it at its proper value as a mere stepping-stone to the larger and more important thing. Knowledge of scientific facts is to-day plentiful, easy to get at, and may be

acquired by the most ordinary intelligence at the cost of a little industry. But an understanding of the philosophy of science still remains as rare as ever. That is why we have so many journeymen in the world of science and so few Darwins.

The essence of Materialism, we hold, is contained in the simple statement that all phenomena, no matter to what order they belong, are due to the composition of natural forces. It is not tied down to any conception of "matter" or of the atom, although both have played a great part in the history of the discussion. The Materialist simply takes his conception of the atom or of matter from contemporary science, and is at liberty to revise these conceptions as may be necessary in the light of fuller knowledge. He does not say that life is a property of matter, nor that life is to be explained in terms of physics or chemistry, but simply that life is a function of certain organized bodies, and that chemical and physical phenomena provide the conditions for its appearance. Further, he holds that to provide an explanation of the origin of life we must discover the conditions under which it appears. That is all science ever means by explanation. As Shadworth Hodgson says, "Dependence means a relation such as that, given a conditioning phenomenon the dependant phenomenon invariably occurs, and in the absence of the conditioning phenomenon the phenomenon called dependent invariably makes default." We do not, with Sir Oliver Lodge, talk about seeing only the effects of life, but not Life itself. That kind of language is hopelessly unscientific; it throws no light whatever on what is before

us, and is a survival of the primitive ghost theory which actually thought of life as something distinct from the organism itself. So long as we keep strictly to the facts we escape the pitfalls which beset us through following supernaturalistic will-o'-the-wisps in either their original form, or in the disguises they assume at the command of those who profess to be dealing with the world in a strictly scientific manner.

It is not seriously disputed to-day that it is upon a Mechanistic or Materialistic foundation that modern science rests. Properly conceived, no other basis is possible. To talk of there being mysteries in the universe with which the methods of science are unable to deal is sheer twaddle. You cannot study a mystery that defies comprehension—the most you can do is to adore it, which is the main reason why mystery has played so great a part in the history of religion. And even with the mysteries the ancient religionist was not quite so stupid as is the modern one. In antiquity the "mysteries" were mysteries to the uninitiated, but to these the initiate, the priest, held the key. It is only in modern times, with the discrediting of the priest, and the necessity of keeping a mystery at all costs, that exponents of religion have preached the existence of a mystery which no one could even comprehend.

But if we are to understand a thing we must think of it in relation to what has gone before, and to what is to come after. To understand a thing we must reduce it to intelligible and understandable conditions. If we think at all about it we must think in terms of

known forces and understandable conditions. It is a sheer impossibility to think in terms of what we do not know. Moreover, so far as we assume things to be explainable we must think in terms of causation. It is that or nothing! and we are thus reduced to thinking of natural phenomena in terms of Determinism, or taking the universe as made up of a number of forces having no fixed or understandable relation to each other.

But if Determinism be a universal fact, it is clearly not something that we can put on one side; if true it is the condition of all sane and orderly thinking. It is a law of thought, and a scientific law must be exemplified in the case of those who believe in it and of those who do not. Otherwise it is not a law at all. The laws of physics, of biology, of psychology, were as operative in the days of the cave-man as they are to-day. The difference lies wholly in our recognition of the nature of processes continuously in being. We discover truth, we do not create it. These are my main reasons for asserting that the Materialistic principle is one on which all science builds. The case of the man who discovered that he had been talking prose all his life without knowing it has a wide and varied application.

So far as the physical sciences are concerned, the Materialistic principle is admitted by all. But having once admitted this principle, why should we question its application right along the line? If we believe that man's body came by evolution, why should we assume that his intelligence came by any other road? What kind of a scientific thinker is it that believes in the

operation of natural forces up to a certain point, and at that point calls in a supernatural agency to innoculate the world with a new force? If we see that, up to the appearance of life, all changes are a consequence of the composition of forces, why should we look for a new agent because a new phenomenon has made its appearance? The advocate of a life force has no knowledge other than that possessed by the ordinary scientist. At best his case rests upon the alleged impossibility of our explaining how the new phenomenon appeared. But this may involve only temporary ignorance. And the ignorance of science is a very poor foundation on which to build a positive belief. As Dean Inge warns those who are inclined to build on the ignorance of science, "Those who take refuge in gaps find themselves in a tight place when the gaps begin to close." And gaps in our knowledge do close sooner or later.

The Vitalist, the disguised Supernaturalist, is fighting at the wrong end. To be logical he should have stuck to the primitive theory of the instantaneous creation of everything. When in pre-revolutionary France it was suggested that women ought not to be allowed to study science, some wit wrote a pamphlet with the title "Should Women be Permitted to Learn the Alphabet?" The meaning was quite clear. Those who wished to stop woman studying science should never have permitted her to learn to read. Once that was permitted, everything else followed. So if the Supernaturalist desires to make an intelligent and a logical fight against the Materialist conception, he should begin at the bottom. He should

deny the principle of Determinism altogether. But having admitted its application to physics and chemistry, or even to the simpler forms of life, it is preposterous to attempt to place limits upon its application, because it threatens the existence of some cherished superstition. In this warfare the anti-materialist is not a soldier in an army that is advancing to the conquest of new territory; he belongs to the rearguard of a retreating force that has fought its principal battles and experienced defeat.

The opposition to Materialism is motived entirely by the fact of its opposition to all forms of supernaturalism. And while on the one hand this is responsible for all the attempts to discredit Materialism, on the other hand, the power of religion is still sufficiently great to lead scientists to find some room for religious beliefs in a world in which they show religion has nothing whatever to do. A striking example of this is seen in a recently published work by Dr. P. McBride, on *The Riddle of Personality*. Dr. McBride's book is an avowed defence of Materialism. Nevertheless, he finds it incumbent to say that the Mechanistic theory, while giving no support to any religious doctrine or dogma, is not of necessity opposed to religion or a form of theism. And all that one can gather from that is that Mechanism is not opposed to the belief in a God so long as one says nothing about God, and does not credit him with doing anything in the only world we know and the only world with which we have to deal. The deplorable nature of this kind of concession will be appreciated by those who note the advantage taken

by defenders of the very doctrines which men like Dr. McBride deliberately repudiate. A little more courage at the outset would certainly save a deal of trouble at the end.

There is no question to-day of the general abandonment by clear thinking scientists of a God who continuously interferes with natural operations. What we have in his stead is a deity who exists somewhere behind nature, who is responsible for the existence of things, but now does nothing but see them work. In practice, this reduces God to a negligible quantity. If things are as they are, if natural forces act as they do act, because of their inherent properties, it is not a matter of vital concern whether these inherent properties were given by God or not. They are there; they affect all people alike, and they continue to act as they do, whether we believe in a God or not. The assumption that God once upon a time did something does not in the least affect the question of whether he does anything now. The first principle of Materialism—that the world we know is what it is as a consequence of the interaction of natural forces—is admitted.

Materialism has always claimed that the closest scrutiny of the world fails to reveal the slightest trace of supernatural influence. It has nothing to do with a God who exists somewhere at the back of everywhere—wherever that may be—and it leaves the proof of his existence to those who believe in him. No Republican has ever objected to a king who did not occupy a throne, and who played no part in national affairs. A God who does nothing is not

likely to trouble anyone. If the action of God is excluded from the world of natural phenomena he has, for all practical purposes, ceased to exist.

For the Theist, the position is not improved if, instead of a God apart from nature, a God is assumed who permeates all nature. That reduces God to a mere algebraic expression, but lacking the function of utility. Moreover, it lacks the essential characteristic of a God—personality and intelligence. Some people appear to be under the impression that God is to be saved by being beaten out thin, and that his dignity may be preserved by his having nothing to do. Moreover, if this were admitted, if it were granted that God is “immanent” in the universe, and permeates every part of it, this does not escape the Materialistic principle, it asserts it. I have already said that so far as Materialism is concerned, it is a matter of complete indifference by what name we call the stuff of the universe—whether we call it existence, matter, or Spirit, or merely *X*. So far as Materialism is concerned the essential thing is that we shall think of the universe as being in all its phases, the consequence of non-intelligent forces. Merely to call this assumed existence “God” makes no material difference. It does not benefit Supernaturalism and it does not injure Naturalism. To even argue that “matter” is not ultimate, but is the product of something else, the whole being the result of mechanical processes, is only turning Materialism out of the window and opening the door wide for its re-admission. What this form of the theistic argument does is to bring God within the category of a natural force operating in a

fixed, definite, and calculable manner. The theist manages to retain a God by throwing overboard all the essential qualities of one.

Shorn of all confusing apologies, the general issue is quite plain. On the one hand there is the primitive supernaturalism of which our modern vitalistic theories are the direct descendants. Under whatever form presented these are little more than primitive animism, with a new terminology and masquerading as science. Ringing the changes on the name ought not to hide that fact. Behind the "Directive Force" of Sir Oliver Lodge, or the "Life Force" of Mr. Bernard Shaw, there lies the vital principle of the medieval metaphysician, and at the back what is the ghost of the primitive savage. That side of the picture is quite distinct.

On the other hand, we have the unquestionable growth of the Mechanistic conception of nature in every branch of knowledge. It is a conception that admits of verification, so far as our knowledge extends, and is an indispensable condition of sane, scientific thinking. Until we conceive nature as following a determinable order, human thought is a chaos. But if the determinable order is there, supernaturalism is doomed. If it is not, then science is impossible. That is the simple issue and there is no logical half-way house. To say that this issue is not seen, would probably be not true. The hatred of Materialism shown by every advocate of Supernaturalism is evidence that the nature of the issue is seen. And from the other side, the fear of religious animosity, resulting in the discovery of some room for religion

within a Mechanistic universe, shows itself in the repudiation of Materialism by scientists, whose whole outlook on nature is fully Mechanistic. The ghosts of exploded theories linger, and inherited modes of thinking are hard to combat, but their influence becomes steadily weaker. Time and experience tends to fully justify the Lucretian claim that nature does all things of itself and without the aid of the Gods.

CHAPTER VII.

ON CAUSE AND EFFECT.

TO the critical reader it will have been obvious that the correctness of much of the preceding argument must depend upon a right conception of causation. We have been considering a constantly changing universe, and have taken it for granted that all change is a question of causation. Yet the nature of causation has never been explicitly argued, although it is quite clear that the relevancy of the arguments used will, to a considerable degree, turn upon what we are to understand by it. Science, we have said, is a search for causes, and causes are found, from a scientific point of view, when we have determined the conditions from which a given phenomenon emerges. When we are able to give a complete description of these conditions, we have not merely stated all it is possible for us to know, but we have acquired the only knowledge that is of the slightest use to us.

Again, we have to guard against the prepossessions involved in the language used. When, for example, the Spiritualist says, as an argument against Materialism, that we cannot see in what way nervous action *produces* thought, there is suggested the picture of two distinct things, thought and nervous action, as

though the one were as distinct from the other as a plucked apple is from the parent tree. Of course, anyone with only a small knowledge of science and of scientific methods would at once disown any such conception, and to an educated mind the notion is sufficiently grotesque. But an examination of many of the anti-materialistic arguments current is enough to show that much thinking is unconsciously coloured by this conception.

In this respect we are all of us more or less at the mercy of the language we are forced to use. Our words are, to use an expression of Oliver Wendell Holmes, polarized. They come to us with associations and connotations that belong to the past, and they carry the influence of past, and too often discredited thinking, into the present.

But with the greatest care, and with the best of thinkers, there exists considerable confusion on this question of causation. To take an example from John Stuart Mill. In the second book of his *System of Logic* (sixth chapter), Mill discusses what is called the Composition of Causes, and makes the assertion—an assertion which we believe to be quite wrong—that “the joint effect of causes is the sum of their separate effects.” And he gives as an example of this the weight of a chemical compound, which is equal to the sum of its constituents. But this is not an example of causation at all; and had Mill kept before his mind the simple fact that a cause must always be a compound of at least two factors, he would never have used such an illustration. In relation to weight we have, in the example given, not two

factors, but only one. Weight is an expression of gravitation, and gravitation does not act upon the mass, as mass, but upon the particles composing it. The law of gravitation is that every particle attracts every other particle in direct proportion to the mass and as the inverse square of the distance. Thus the size, or mass, or the whole weight of a body adds nothing whatever to the phenomenon of gravitation. There is no composition of causes here, there is a mere sum in addition. In sober truth gravitation is not a cause of stones falling to the ground, gravitation *is* the falling.

It will be well, before concluding this chapter, to deal with some of the uses to which the argument from causation is put by some, in order to bolster up certain forms of supernaturalism. But before doing so, it is necessary to try to give to the terms "cause" and "effect" as precise and as scientific a meaning as is possible.

The earliest conception of causation is that of compulsion. A cause is one thing, an effect is another, there is a succession of events, and one follows the other because of a species of compulsion. The metaphysician expressed this compulsion as the action of some occult "Principle," the theologian as due to the action of the will of God. Both were pure verbalisms, since they threw no light whatever on the essential question. This species of explanation is far from dead, even to-day, but it was at least very severely shaken by David Hume, although the subject was acutely discussed by Malebranche, Locke, and Hobbes, while the Humian position, or something very near it was

actually stated as far back as the time of Empedocles. In the case of Locke, the argument from causation had been used to lead up to a belief in deity. But Hume seizing upon Locke's statement that the mind commenced as a blank sheet of paper on which experience inscribed characters, set himself to work to discover just what it was that experience taught us. It is true, he said, that experience tells us that events follow one another, but it does not and cannot show us any necessary connexion between them. We do not, in any case, observe power passing from one to the other. But because we see one thing followed by another, and in the same order, we assume that there is some power in the one by which it infallibly produces the other. The connexion between the two is the contribution made by the mind to what it experiences.

So far as Hume was concerned causation meant simple succession, or as more recent writers have expressed it, the observed sequence of phenomena. And it is easy to see why this motion commended itself to him. He had before him the primitive notion, dressed up in the imposing language of theology and metaphysics, of a cause producing an effect in virtue of some coercive power. All sorts of wild theories were based upon this idea, and against these, his essay was brilliantly successful. Taking his stand on Locke, and utilizing Berkeley's clever analysis, which dismissed "matter" as "a figment of the imagination and a refuge for Atheism," he insisted that all we had to go upon was the constancy of certain associations. We think of things as compulsorily related, because

we have always found them related. But all we are warranted in asserting is the bare fact of relation. Further than that we are not warranted in going.

At first sight nothing seems more convincing. But further consideration will, I think, show that Hume only got rid of one fallacy to substitute another—indeed, that he missed altogether the essential fact in causation.

There was no question among the disputing parties as to the fact of succession. That was admitted by all. Hume's opponents held that the succession was due to either some indwelling power or to the direct action of deity. Hume emphasized the succession, but denied the indwelling or the coercive agent. In denying this occult agency he was on the strongest possible ground. What he did not see was a truth emphasized strongly by Sir William Hamilton; seen, but not fully appreciated by John Stuart Mill; fully appreciated and strongly emphasized by George Henry Lewes; and since his time by other writers. This is that all the gratuitous mystery of a force passing from cause to effect, all the search for a "causal nexus," resulted from taking cause and effect as two distinct things, whereas they were only two aspects of the same thing. The true line of rectification lay in dealing with the difference between cause and effect as the difference between a fact and its factors. The matter was not simplified by Hume's great successor, Kant, in describing causality as a form of thought, since he was replacing an objective necessity by a subjective one. A necessity of thought is, after all, only one side of a necessity of things,

and there was, consequently, just a change of language without any real enlightenment.

We may get on the track of the real answer by taking the illustration used by Hume. If we observe the collision of two billiard balls, we notice that the impact of one is followed by the motion of the other. That is all we see, and it is the sole reason which we have for saying that the impact of the first was the cause of the motion of the second. And that, he says, is all we actually see in any case of causation. The only reason we have for saying that *A* is the cause of *B*, is that *A* precedes *B*. Now, if this is a complete description of what occurs, then the matter is ended. But I think it can be shown otherwise.

Far from being complete, this description leaves out of sight considerations of fundamental importance. To commence with, the first ball *A* is not, in virtue of its motion, a cause at all. If it did not travel as far as *B*, or if it failed to strike *B*, then it could not be a cause in relation to *B*. The two balls are in causal relation at the moment of collision only. And omitting the loss of momentum through friction, the momentum acquired by *B*, represents the loss of momentum by *A*. Therefore, if the acquired motion of *B* stands in the relation of an effect, of which the motion of *A* is the cause, the inertia of *B* stands as the cause of which the arrested motion of *A* is the effect. Taking then the product of the collision—the acquired momentum of one ball and the arrested motion of the other—cause and effect become here interchangeable terms.

The problem to be solved is the effect, or the pro-

duct, of a moving ball striking a stationary one. And the important thing to bear in mind is that the two balls are in a causal relation to each other at the moment of collision only. Prior to that they are entirely unrelated. Further, the effect of the collision must cover the whole of the product of the impact—whereas Hume notes but a part. One of the balls is, indeed, in motion before the other, but it is not this motion that makes it a cause of the motion of the other ball, but the fact of impact. That is, the cause is not constituted by antecedence, but by a conjunction of conditions, and the effect is the power of the co-operating conditions. It is not a succession of conditions we are concerned with, but with their assemblage, and both cause and effect are coincident with their assemblage. Hume's mistake was evidently due to his fixing his attention in the wrong direction. Impressed with the fallacy of some occult power passing from the cause to the effect, he overlooked the most salient feature of the problem.

Philosophers have looked for succession where they should have studied co-operation. When we describe a cause for a given effect, we are never doing more than describing the conditions from which the effect emerges. In describing an effect we are describing the co-operation of a given group of forces and conditions. Cause and effect are, therefore, not two distinct things at all. They are two phases of the same thing. When we analyse an effect into its factors, we are describing its cause. When we synthesize the factors into their product we are describing the effect. Sulphur, charcoal, and nitre are not the cause of

gunpowder considered separately, they only become such when they are brought into combination. Whether they are a cause of gunpowder or not depends entirely upon that fact. In every case of causation it is the fact of the assemblage of the appropriate factors that is the important and essential thing. The effect does not follow the combination, it is coincident with it. The effect is the registration of the combination. The whole of the confusion lies in our separating in thought, things that are inseparable in fact, and then treating them as quite independent existences.

Had this consideration been always borne in mind, the confusion existing over the question of causation would never have existed. As it is, we find one thinker after another apparently unable to rid his mind of the idea of cause and effect as being two independent things, one of which succeeds the other. Mill occasionally caught glimpses of the truth, as when he defined a cause as "the assemblage of phenomena, which occurring, some other phenomenon invariably commences." But this is followed immediately by the nullifying statement, "whether the effect coincides in point of time with, or immediately follows, the hindmost of its conditions, is immaterial." If what has been said above be correct, the effect is always coincident with the cause. Writers have spent their time looking for a relation apart from the things related; searching for a link between cause and effect, as though it were a question of a coupling between two railway carriages. And those who have denied the existence

of any such link, have generally only made the confusion worse.

It is probable that had causes been thought of as forces the case would have been clearer. It might have been then realized that while the identity of cause and effect is fundamentally an illustration of the indestructibility of force, the changes in phenomena, due to a combination of factors, is an illustration of the equivalence and convertibility of forces. But in thinking of cause and effect as two separate things, room was given for speculation as to what united the two. The metaphysician found room for his occult "principle," the theologian for the action of deity. Also, there ensued the discussion as to whether we could ever know causes in themselves—which again left room for the existence of an unknowable factor in causation.

What I have tried to make plain is that we know causes in the only sense in which we know anything. When we know that an effect results from the combination of certain factors we know causes in the only way in which knowledge is possible. If this is not scientific knowledge then scientific knowledge does not exist. We know that a particular grouping of agents issue in a particular consequent. The function of this group, as a cause, is the effect we see. Whether we know all about the powers of the factors, or all the qualities of the combination, is quite another question. On this road there is room for endless development. But development is neither certain nor secure while we obscure the issue with metaphysical verbiage or theological fallacies.

The bearing of this question of causation on much that has been said in the preceding pages will be obvious to all. It answers the objections put to thinking of life and mind as emerging from causes utterly unlike either. It is quite in line with the Materialist conception of the phenomena of nature as being all along an integration of existing forces which manifest new forms by the very act of integration. It explains the creation of new "laws" of nature in order to describe fresh phenomenal groups; and above all, it banishes those metaphysical ghosts which have for so long dogged the footsteps of the scientific worker.

It may not be quite out of place to touch here upon one or two points which arise in the discussion between the Theist and the Materialist on the question of deity, and which turn upon the use made of the concept of causation. There is, for instance, the common statement that one is led to a belief in God from a perception of the fact that every effect must have an adequate cause. But there is no question of adequacy, and it is really not adequacy the Theist is trying to establish. When he argues that life cannot be a product of non-living material because no trace of life can be discerned in it, he is not arguing for adequacy, but for likeness. When he says that an effect cannot be greater than its cause, what he really implies is that it cannot be different from its cause, which is absurd, since, as we have seen, there must always be unlikeness between cause and effect. The question of "greatness" is quite illegitimate. What nature pre-

sents us with is not greatness and littleness, but difference. It is we ourselves who make things either great or little.

The reply to this line of argument has already been given in the demonstration that the factors from which, when combined, an effect emerges, always do give something which is not manifested in the factors themselves. If we are to conclude otherwise, and to subscribe to this form of argument for Theism, then we shall be forced to conclude that in not a single case is a cause adequate to its effect, and we should thus destroy the argument in the very act of establishing it.

Sir Oliver Lodge, in his little book, *Life and Mind*, properly corrects this common blunder by pointing out that "properties can be possessed by an aggregate or by an assemblage of particles, which in the particles themselves did not in the slightest degree exist." But in his desire to find a basis for his own theism, he perpetrates substantially the same error. We are on safe ground, he says, in asserting that "whatever is in a part must be in the whole." This is probably true if all that is meant by it, is that as the whole contains the part, the part is in the whole.* But in that sense, the statement was hardly

* I say probably true, because it is open to question how far we are justified in saying that the properties of a part remain the same in combination as they were prior to combination. How far, for example, is it correct to say that the properties of oxygen and hydrogen remain unchanged when water is formed? Certainly, we cannot trace all their properties while the combination exists. It is quite true that we can resolve water into its constituents; but that does not meet the point. One might retort by asking: What is oxygen which does not manifest the properties of oxygen?

worth making. At any rate, it does not follow that because there exists with man certain phenomena to which we give the general name of mind, that mind must be present in every part of the organism. One might as well say that because the quality of wetness is present in water it must be present in its constituents.

Another, and very famous, argument is that of working back to that Theistic nightmare a "First Cause." But a first cause is downright nonsense. A cause, as I have pointed out, must consist of at least two factors. A single one could lead nowhere, and give rise to nothing. And in every attempt to establish causes, we are engaged in the task of disentangling factors. Causation is an infinite series—a series, that is, to which no limits can be placed—for the reason that the resolution of every effect into the conditions of its existence leaves us with exactly the same problem before us. We are still engaged with the question of how that form came into being. We explain A by B, we explain B by C, and so on for as far as we can go. "First" has no other meaning save first in relation to a given group of phenomena. "First" in the sense of something that calls for no further explanation is simply non-understandable. It is true that we have to stop somewhere, but it is foolish to give to mental exhaustion the quality of a positive discovery, or to consciously make the evidence of mental limitations the equivalent of a demonstration of the existence of a God.

Still further. "Cause" is a term which can only be applied to phenomena, to the things we know. God,

on the hypothesis, ranks as the cause of phenomena, something that lies beyond it, and to which the laws of phenomena do not apply. When we leave this world, the laws we have devised to describe what occurs therein have no possible application to another and a radically different world. "God" cannot, therefore stand in the relation of "cause" to this world since that would make him part of the world of phenomena. So that even if the Theist, by travelling back along the line of phenomena could, in some inconceivable way reach God, he would be left with no method of getting back again. If he relates God to phenomena, he has merely established another link in an unending causal chain. And if he does not so relate God, then God ceases to be a cause of phenomena, and the theistic case remains in the air.

Causation, in short, does not and cannot carry us back beyond phenomena. The notion that because all phenomena has a cause, therefore there must be a cause for all phenomena—meaning by this a non-phenomenal cause for the sum total of phenomena—is wholly absurd. It is not science, it is not philosophy, it is not common sense. It is nonsense with its nature disguised in pompous language. You cannot rise from phenomena to the theistic god, because, as I have said, cause and effect are terms describing the relation of one phenomenon to another, and the moment we get outside the circle of phenomena our language and our laws lack relevancy. It is like discussing a bird's flight in the absence of an atmosphere. The theist commences with a wrong conception of causation. He proceeds by applying it to a region

in which it has clearly no place, and having confused the issue with clouds of words, ends with a conclusion that, on his own showing, has no relation to the premises laid down.

CHAPTER VIII.

THE PROBLEM OF PERSONALITY.

PRIMITIVE conceptions disappear but slowly. Long after they have been specifically disowned, they occupy the mind in a more or less disguised form, and continue to influence thought. We have seen many illustrations of this in the preceding pages, and the persistence of outworn thought forms is peculiarly in evidence when we come to deal with such conceptions as that of "self" or "personality."

This is not the place in which to enter into an elaborate discussion as to the natural history of the idea of a soul. It is enough to say that this has been done very effectually by modern anthropologists, who have traced its history from the mistaken inferences of the primitive savage up to the more elaborate, but more tenuous theories of the civilized races. In its crude form, that of the soul, or double, as a literal copy of the body is held to-day chiefly by the advocates of Spiritualism. The more orthodox religionists are content to dwell in a cloudland of phrases, whose nebulousness, to some extent, protects believers in it from criticism. But there is small room for doubt that in the imaginings of the savage, who from the phenomena of dreams, and the like, derives

the idea of something inhabiting the body, which is a miniature copy of the body he sees, we get the beginnings of the conception of a "self" which controls the body, and which, while it may be affected by bodily changes, and can only express itself through the physical organs, is yet independent of them.

The development of human thought is gradual, the new fitting itself, with greater or lesser comfort, into the moulds of the old; and man does not cease to theologize because he commences to philosophize. He takes the existing language, and the old forms of thought, and tries to combine them with what new truths he has discovered. Primitive thought is very concrete, and the double is never thought of as radically different from the body. It is finer, more elusive, but quite as solid in its way as is the body. But as a knowledge of the organism and its functions becomes more definite, the ghostly becomes the immaterial, and the philosopher is called in to harmonize the crude theology of the savage with the actual results of more informed thinking. Indeed, it takes very little reflection to realize that, from the days of the Greeks onward, the alleged reasons that philosophers have given for believing in the existence of a mysterious something inhabiting the body, but yet independent of it, owe their existence to the desire to retain the old conception, rather than to knowledge having demonstrated its probable truth.

For it is never knowledge that is stressed as a basis for this belief, but only its absence. The Materialist is challenged, not on the ground that his opponent has greater knowledge than he, but on the ground

that the Materialistic conception is unable to explain in detail *everything* that is before us. The man who is unable to advance a single piece of verifiable evidence on behalf of the theory he holds, demands the most rigid demonstration of the truth of an opposite conception before he will accept it. He is not content with the fact that the Materialistic hypothesis covers the fact, at least so far as it goes; nor with the reflection that hitherto it is the only method that has enabled us to understand anything. What he demands is that the proof shall be absolute, the circle of knowledge complete. Before he will cease to advocate the toned-down beliefs of the primitive savage he demands that man shall know all there is to know.

At any rate I desire to emphasize the fact that however refined or modified the idea of an independent "self" may become, we are dealing with a watered-down conception that we owe to the psychological blunder of the primitive savage.

Let us commence with the fact that to all of us man is primarily a body. That he is something else in addition, may or may not be true, but he is certainly that. Further, we know life, not as a thing in itself, but as the expression of a relation. When we speak of a thing as alive, we imply no more than that in relation to certain other things it behaves in a particular manner. If I want to find out whether an object before me is living or dead, I apply certain tests, and as it does or does not respond to these tests I say it is one or the other. That is all that I or anyone else can mean with certainty when we speak of a

dead thing or a living thing. These relations may be very simple as with the lower organisms, or they may be varied and complex, as with the higher animals. But the primary distinction between a living and a dead body may certainly be expressed in this way. I may assume that these relations are controlled by a mysterious entity inside the organism, I may go on to enquire how this entity got there, and where it will go when the organism is "dead." But the existence of such an entity is a pure assumption. And it explains nothing. The real, the essential thing before us is how are the relations which we all take as indicative of life maintained.

I have said earlier that I do not agree with those who say that we do not know what life is; we do, although we do not know all about it. We mean by life the maintenance of certain correspondences between an organism and its environment. If I am asked how these correspondences have arisen, or in what way, given some primitive form of existence, certain highly complex forms of existence have arisen, I may be compelled to answer, "I do not know," although we are at liberty to speculate on the basis of what we do know. But so far as our knowledge does go, we are certainly warranted in assuming that "life" arose in substantially the same way that chemical and other phenomena have made their appearance. The researches and experiments of investigators such as Jacques Loeb have made it quite plain that many of the apparently psychic manifestations of lower organism may be explained as reactions to light or heat or chemical forces. It has also been shown that fecunda-

tion is a purely chemical process; and scientists already talk of as almost within their reach, the determination of sex.

Yet again, modern science has shown us that the animal body is composed of a multitude of cells, each carrying its own unit of force, and that it is the combination of these that gives us here the body of John Smith, and there the body of a tadpole. And whatever else death may mean it means certainly the break-up of this co-operative colony. And how is John Smith's life, which we are compelled to regard as the sum of the activities of this associated cell-life, how is this to continue when the condition of its association is no longer there? What we are asked to believe in is the continued existence of a corporation, after the corporation has been dispersed. Reduced to plain language the proposition is pure nonsense.

So much for what I may call the physical aspect of the matter. But when we are dealing with the sense of self, or the feeling of personal identity, we are concerned, largely, with psychology, and must approach it in another way.

There is, of course, no question of the reality of this sense of self. It does not follow that because I do not accept the Spiritualistic conception of self, that, therefore, I deny the sense of self, or that we may not give to it a quite definite, and, I hope, a scientific meaning. Whatever theory we have of the nature of John Smith, John Smith is a fact; and it is not the existence of the fact that is questioned, but its nature. Consequently all the talk of "I am I," or the impossibility of denying the sense of personality, is just

verbiage. No one wishes, or attempts to deny that personality is a real thing. One might as reasonably be accused of denying the reality of epilepsy because one does not agree with the New Testament Jesus that it is caused by demons invading the body. What is questioned is whether in addition to the human body and its functions there exists an independent entity which animates it for a time, and then departs. And when we try to reduce that proposition to mental imagery we find we have essayed a hopeless task.

Let us try to form a clear idea of what it is we wish to find out. "A man," says Professor Bradley in his fine work *Appearance and Reality*, "commonly thinks that he knows what he means by self. He may be in doubt about other things, but here he seems to be at home." That is really one of the difficulties of the situation. "I know that I am myself," is a common expression. "I am the self which persists through all change, and cannot therefore be the outcome of or dependent on these changes," is another. And from such like statements, enforced by the primitive ghost theory, there is built up the belief that the self is something which uses the bodily organism during life and seeks other fields of adventure after death. Or it is argued that a sense of self cannot be built up from states of consciousness because they are fleeting things. They come and go, and there does not seem to be any necessary connexion between them. To create a "self," a person, these states of consciousness must at least be fused into an organic whole, and for this work a transcendental entity is assumed which merges these impermanent states into one. This

fusion, it is admitted, may give us a continuous mental life, but it does not create a sense of self. The real self—the soul—is nourished by the experiences through which it passes, but it is not dependent upon them for its existence. That is the Spiritualistic theory in as few and as simple words as I can give it.

The opposing theory is that “self,” while a reality as representing the sum of the activities of the organism, is myth, if by it is intended something which merely takes possession of the organism, or is in its essence independent of its activities. Hume, with that delightful clarity of vision and precision of phrase of which so many philosophers are destitute—and which, if they possessed, might quickly prevent them being recognized as philosophers, put this clearly. He says:—

There are some philosophers who imagine we are every moment intimately conscious of what we call our Self; that we feel its existence and its continuity in existence; and are certain beyond the evidence of a demonstration, both of its perfect identity and simplicity . . . It must be some one impression that gives rise to every real idea. But self or person is not any one impression, but that to which our several impressions and ideas are supposed to have a reference. If any impression gives rise to the idea of self, that impression must continue invariably the same, through the whole course of our lives; since self is supposed to exist after that manner. But there is no impression constant and invariable. Pain and pleasure, grief and joy, passions and sensations succeed each other, and never all exist at the same time. It cannot, therefore, be from any idea of these impressions or from any other, that the idea of self is derived—For my part, when I enter most intimately into what I call *myself*, I always stumble on some particular perception or other: of heat or cold, or light or shade, love

or hatred, pain or pleasure. I never catch myself without perception, and never can observe anything but the perception. When my perceptions are removed for any time, as by sound sleep, so long am I insensible of *myself*, and may truly be said not to exist. And were all my perceptions removed by death, and I could neither think, nor feel, nor see, nor love, nor hate after the dissolution of my body, I should be entirely annihilated, nor do I conceive what is further needed to make me a nonentity. If anyone, upon serious and unprejudiced reflection, thinks he has a different notion of himself, I must confess I can reason no longer with him . . . But I venture to affirm of the rest of mankind that they are nothing but a bundle of perceptions which succeed each other with an inconceivable rapidity, and which are in a perpetual flux and movement.

This is very clearly put, and later writers have added nothing to the essence of the statement. There have been additions, and certain reservations, the phraseology may have changed a little, and there have been some powerful endorsements from the physiological side, and by experimentation in the psychological laboratory—an institution quite unknown when Hume wrote. But, substantially, this theory holds the scientific field. The self is not something which exists prior to experience, and which is superior to experience, It is born of experience, and represents the sum total of the activities of the organism in given directions. Had Hume lived in our day he would undoubtedly have agreed with the leader of the Behaviouristic school of psychologists, that personality is the expression of "the total mass of organized habits; the socialized and regulated instincts, the socialized and tempered emotions; and the combinations and interrelations among these." Self as an entity is incon-

ceivable and useless, since we can only deal with self as the mass of the reactions of the organism to specific environmental activities. And from that point of view we are able to understand, not merely the existence of the self as a normal fact, but also its alterations and aberrations.

Now against the position outlined by Hume, the objection is raised that if I am merely the sum of my mental states, how do I come to be aware of the fact? If the self is a product of a series of mental states the knower of the series must be something distinct from the series. For a series has a beginning, a middle, and an end, and this must be known by someone or by something that contemplates the series as a whole. But without a something that knows the different stages of a process and relates them, a series, as a series, cannot exist. A sensation comes and goes. It cannot relate itself to a preceding one; that is dead. It cannot relate itself to a succeeding one; that is not yet born. What is required is something that will cognize each sensation as it arises, and relate it to that which is gone and that which is to follow.

Those who are conversant with the historic controversy over the doctrine of Association will recall the above as a re-statement of a very old objection. And the first comment I have to make is that the hypothesis of a transcendent self really does nothing at all to solve the puzzle. Every difficulty that stands in the way of accepting the ego as the expression of a fusion of mental states on the ground that this cannot be at once the known and the knower, applies with equal force to this assumed "self." How does the

ego become aware of itself? If it knows itself prior to experience, it is in the position of being both that which knows and that which is known at the same time, and the objection to the other theory falls to the ground. If it knows itself because of the sensations experienced, the doctrine attacked is reinstated under another name. There is surely no greater difficulty in realizing how a multitude of sensations become blended into a unity that appears as "self," than there is in understanding how a something that is independent of experience blends experience into a unity. To say that we know the ego connects these mental states because we know they are connected, is only stating the thing twice over. We know they are connected because there is the admitted fact of their connexion. How they are connected is the question at issue; and I hope to show that the neurological theory of their connexion answers the question well enough.

Altogether the soul theory gives no help. It only adds a difficulty to those that already exist. It is, as William James says, "a complete superfluity, so far as accounting for the verified facts of consciousness goes"; and Professor MacDougal, in his *Body and Mind* says:—

It is matter of common knowledge that science has given its verdict against the soul; has declared that the conception of the soul as a thing, or being, or substance, or mode of existence, or activity, different from, distinguishable from, or in any sense or degree independent of the body, is a mere survival from primitive culture, one of the many relics of savage superstition that obstinately persists among us in defiance of the clear teachings of modern science.

Professor MacDougal's statement is the more telling from the fact that it occurs in a bulky volume written to re-establish some form of the theory which he declares has gone out of fashion. It is a pre-scientific form of thought, and until the student gets that well into his head, he has not taken the first step towards a genuine understanding of the question.

If I may anticipate, it is pertinent to point out that "self" is no more than a general name for a given class of phenomena, although once created it stalks through the world of philosophy with the autocratic serenity of a trades' union official issuing instructions. Such terms as "self," "mind," or "consciousness" are so frequently stumbling-blocks to an appreciation of the facts of the situation, that it might be well if we could, at least for a time, banish them from the world of science altogether. One school of psychologists actually proposes doing this in the case of consciousness, and William James says of this term :—

It is the name of a nonentity, and has no right to a place among first principles. Those who still cling to it are clinging to a mere echo, the faint rumour left behind it by the disappearing "soul" upon the air of philosophy . . . For twenty years past I have mistrusted "consciousness" as an entity, for seven or eight years I have suggested its non-existence to my students, and tried to give them its pragmatic equivalent in realities of experience. It seems to me that the hour is ripe for it to be openly and universally discarded.

The great problem is how to clear out these phantoms of primitive thought. It is not an easy task. They are established by tradition, supported by vested interests, and although quite unable to show

valid title deeds, demand undisturbed possession in virtue of lengthy occupation. "Clear out the ghosts," might well be the cry of all who aim at inducing useful scientific thinking.

The more carefully we study the manner in which personality is built up, the more impossible does the theory of an autonomous "self" become. Consciousness, which is often called in to pass judgment cannot help us. And all that we are ever conscious of is a sensation, or the memory of a sensation, or the relation between sensations, and of the flow of ideas. But of the nature of the process, of the way in which the past is linked to the present, in what way the stream of sensible experience is forged into an organic whole, consciousness can tell us nothing.

When it is said that the self maintains its identity over a lengthy period, while the body is not, are we to take that as an expression of the facts? I think not. It is no more true of the mind that it is of the body. There is, unquestionably, a physiological unity of the body. That is obvious and unquestioned. In spite of the changing material of which the body is composed, in spite of the radical changes that take place in bodily structure from birth to old age, there is maintained a physical continuity. This is because the changes that take place are gradually affiliated to the body pattern. The particles that replace the wear and tear of the body fall into their places, and take the shape of the body to which they belong. Why may not the same be true of the mental characteristics of the individual as a whole? Or by what right do we say that while the body changes the personality re-

mains constant? To speak of the "self" of the present moment as identical with the self of twenty years ago, is simply not true. Our ideas, our feelings, the range, the direction, the application of our emotions all undergo profound modifications, sometimes drastic changes, with the passing of the years. If these do not make us different personalities what will? We all recognize these changes, sometimes with pride, sometimes with sorrow, and our friends recognize them also. The ego, says Dr. Henry Maudesley, pithily, "is not a constant but a variable," and that gives the truth of the matter. There is no such constant self-unifying ego such as the ghost theory requires. There is a self continuously undergoing change, with a memory, more or less full, of innumerable past selves. It is memory that supplies the unifying link, not the impalpable ghost of the metaphysician or the theologian.

The cardinal weakness of most of the criticisms of Materialism in this connexion, is that they ignore the physical substratum which unquestionably underlies all mental phenomena. In arguing that there must be a conscious self which serves as the cause of the blending of mental states into a whole, the function of the nervous system is completely ignored. Mental states are treated, not merely as separable things, but as independent things. The criticism that a mental state which appears, disappears before its successor arises, and lacks, therefore, the condition of fusion or connexion, certainly does this. And that is ignoring one half of the problem before us. For a mental state is always the accompaniment of a neural

process. And in considering the nature of this we shall find all that is necessary to the establishment of a feeling of identity persisting throughout constant change.

Let us take, as an illustration, the case of muscular action. We are all familiar with the truth that within limits a muscle becomes stronger as it is used. It not only becomes stronger, but it responds with greater efficiency to the appropriate excitation. We see this in the ease with which athletes perform actions that once required time and reflection to consummate. The muscle not merely conserves the benefits of past action, it tends to reproduce the same kind of action. But this quality is not peculiar to muscular fibre. It is characteristic of all nerve tissue. Educability is the great and important fact here. All training is based on it. A child learning to play the piano has at first to pick out certain notes slowly and deliberately. After a time the notes are struck automatically, while the conscious attention may be directed elsewhere. Expressed in psychological terms the nerve tissue is contracting a memory. And nerve tissue not only learns, it forgets. Just as frequent repetition makes the performance of an action easy and automatic, so desistance makes repetition more difficult. In the one case, to use psychological language, the cells remember, in the other they forget.

It may be said that in speaking of the cells' remembering and forgetting, I am in danger of mistaking a figure of speech for an actuality. The criticism is not so forceful as it appears at first sight. From the standpoint of the unity of the organism,

memory must involve some kind of molecular change, and in that case it is safe to assume that with every repetition of the change this molecular rearrangement becomes more definite and more easily made. Every discharge of molecular energy will, to use a phrase of Romanes', tread in the footsteps of its predecessor. On the psychological side there is a memory of previous events; on the physiological side there is the gradual alteration of nerve tissue, which always, to some extent, conserves the effects of past stimulations, and reproduces them under similar conditions.

Indeed, it is only by some such conception that we can picture to ourselves what we know is taking place. It is giving no information whatever to say that memory records past events. It is merely saying that memory memorizes, or that memory is the act of remembering, which, while good enough for a dictionary, is not very enlightening. But to say that the nervous structure registers impressions and reproduces them, that it is modified by practice, and so the more easily responds in a given direction, does actually tell us something since it exhibits a possible machinery for the process.

“Personality,” says a recent writer on the subject, “can only have a meaning if thought of in terms of a synthesis.”* With this I quite agree; and it is not difficult to see the manner in which the personality of each is built up. With the new-born child it is non-existent. We can, if we watch, actually see the child discovering itself. It discovers its limbs, as it

* Dr. R. G. Gordon. *Personality*. (1926).

discovers their uses. Probably vision is the beginning of this discovery, to be helped later by the sense of touch, and with increased experience the notion of a physical self is elaborated, as the basis for the development of psychic self. From thence onward as we watch the child's experience of home, of friends, note its passage through school life, its contact with the outside world, the influence of social forms and customs, we can see the steady formation of that bundle of specialized bodily and mental characteristics which we readily recognize as John Smith or Thomas Brown.

Moreover, although I have not now the space for elaboration, it may be pointed out that the sense of personal identity, the feeling of continuity persisting in the midst of change, depends not so much upon the operations of a mysterious "me" as it does upon the things thought about. If we were to imagine an organism living in a universe in which no two experiences, no two sensations were alike, it is difficult to see how a sense of personal identity could ever arise. We feel ourselves to be the same person to-day as yesterday, because we see the same objects and experience the same sensations and associations. It is not a mysterious "ego" that impresses itself upon the world, but the other way about. It is the things thought about, the uniformity of experiences, which, when appropriated by the organism, give rise to the feeling of self.

The human self is a manufactured thing, only to be understood in relation to the environment in which it is fashioned. Divorce it from this environment, and

not only does it cease to be intelligible, but it ceases to exist. How can one think of love of family apart from the procreation of children? Or of love of country, apart from the world in which we are living? What are we to make of comradeship, honesty, duty, justice, loyalty, truth, apart from an environment such as the one in which we are living? The one certain thing here is that our personality is fashioned not only by *an* environment, but by this environment, and can have meaning and application in this environment alone. It is plainly the environment which shapes the personality, and even though we were to admit the existence of the "self" as something that is independent of the body, in the absence of the body and its environment it would remain like the earth in the genesaic creation story, without shape or form, and we may add, without meaning.

If we turn from the side of health to that of disease we have evidence of another kind, but to the same end. On the one side we can watch the building-up of the sense of self, on the other we can watch its disintegration under the influence of disease or of abnormal conditions. In such cases as those of dual personality we have the phenomenon of two distinct "selves" showing themselves alternately, each living its own life, each with its own set of memories and character pattern. It is clear that the advocates of an independent entity can offer no explanation of these things. Why should the "self" undergo these marked changes? Why should the presence of disease change a good-tempered, easy-going individual into a querulous, fretful personage, with whom it becomes

almost a torture to live? Why should the self, which usually exhibits one set of characteristics suddenly and alternately exhibit another set? Of course, if we regard the "self" as, so to speak, the function of something else, the matter is understandable. We are witnessing the disorganization or disintegration of a personality which has been gradually built up. When we look at it from other points of view we are left asking which, of the many selves which the individual manifests from the cradle to the grave, is the true "self." Is it that of the child or the youth or that of the old man? Why should it be one rather than the other?

It must be borne in mind that I am not questioning that the term "self" stands for a fact, and for a very definite fact. It is only the Supernaturalist who makes the Materialist deny the obvious in order to make him stand for the absurd. We do recognize—all of us—that John Smith differs from Peter Robinson. We know that if Smith is brought up against a particular set of facts, he will be likely to react in one way, and that if Robinson is brought up against the same set of facts his reactions may be quite different.

In these cases what is called the personal equation, the character pattern of the individual will come in, and these account for the differences we note in the two individuals. It is not at all a question of denying the reality of self, but of attempting to give "self" a definite meaning. So far as my consciousness of the continuity of "self" is concerned, it would appear to be entirely a question of memory, or as it has been called of memory—synthesis. To be told that "I" am

conscious of continuity of my individuality, can only mean that I am able to relate certain experiences that have gone to experiences that are present, and to fuse them into a whole. But it is observable that this capacity of relating the past to the present exists, so far as consciousness is concerned, only to such states or to such experiences as I am able to recall. Our character pattern begins to be fashioned early in our lives, but of the earliest of these not a trace remains in our consciousness. Neither in feeling nor in memory am I identified with that far-away baby any more than I am identified with the personal experiences of the President of the United States. There is, of course, a trace of every experience in the whole of my make-up—but that is not quite the same question.

Just as there is this gap in my consciousness concerning my earliest years, so there are also gaps here and there, running right through the whole of my life. It is the capacity of relating the past to the present that certainly forms the basis of the sense of continuity; and where this does not exist, or where disease, or some other cause manages to break this sense of continuity, the sense of personal identity disappears. If people would only go straight to the facts, and ask their meaning, instead of first stating a belief, and then fighting for it, there would not be nearly so much mystery about these questions as there is at present.

The sense of personal identity means, then, the bringing together of a series of memories so as to form a definite and stable pattern. Apart from this, what

we have is only what has been called, in somewhat misleading language, a biological memory—an influence shown in a modification of nerve tissue of the incidence of forces on a plastic organism. But so far as a consciousness of personal identity is concerned, it is the memory of sights seen, of sensations experienced, the whole of the attachments of the organism, that give us the sense of persistence and identity. Where this memory does not exist, neither does a sense of the persistence of the "ego."

It would take too long to make an excursion into the region of pathology, but I will just refer to the many cases of men and women who are found wandering about with their memory gone, who have forgotten their names, their friends, and all details about their past lives. Or we might take the cases of men who from some injury have had their whole character changed from even tempered, honest, and reliable individuals, to dishonest, bad tempered, and uncertain persons. What, in such cases, has become of the persistence of the "self"? In some way or another the memory synthesis of that person has been destroyed, the unity of the self has been disturbed. If the old state can be restored, we shall have the old self manifesting itself. If this cannot be done, it will have gone for ever.

There is, however, the curious and suggestive fact, that a new memory synthesis may be built up, and a new individuality created. One way or another it is possible to observe, in general outline, at least, the building-up and disintegration of this mysterious "self" on a basis of change and continuity. The whole

belief in a "self" that is independent of experience is a heritage from the ghost theory of the savage. It has no other basis. So long as we think of human qualities as emanating from some mysterious entity working through the body, we are moving in a world of vague phrases in which indefiniteness of language passes for useful thinking. It is only when we deal with the whole manifestations of human organism in terms of organ and function or of structure and its "mergents" that we are clearing the road to more exact and more useful knowledge.

LIST OF PUBLICATIONS

Issued and Sold by

THE PIONEER PRESS (G. W. FOOTE & CO., LTD.)
61 FARRINGDON STREET, LONDON, E.C.4.

CHAPMAN COHEN :

GOD AND MAN. An Essay in Commonsense and Natural Morality. A Plea for Morality without God. 2d., postage ½d.

GOD AND EVOLUTION. Can a Christian Believe in Evolution? A Straightforward Essay on the Question. 6d., postage 1d.

BLASPHEMY. A plea for Religious Equality. 3d., postage ½d.

CHRISTIANITY AND SLAVERY. With a Chapter on Christianity and the Labour Movement. Portrait and Illustration of the slave-ship *Brooke*. 1s., postage 1d.

WOMAN AND CHRISTIANITY. The Story of the Exploitation of a Sex. 1s., postage 1d.

SOCIALISM AND THE CHURCHES. 3d., postage ½d.

CREED AND CHARACTER. The Influence of Religion on Racial Life. 4d., postage 1d.

WAR AND CIVILIZATION. 1d., postage ½d.

DEITY AND DESIGN. An Examination of the Famous Argument of Design in Nature. 1d., postage ½d.

DOES MAN SURVIVE DEATH? Verbatim Report of a Debate with Mr. Horace Leaf. 4d., postage ½d.

THE PARSON AND THE ATHEIST. A Friendly Discussion with the Rev. E. Lyttelton, late Headmaster of Eton College. Covers most of the fundamental issues between Christians and Freethinkers. 6d., postage 1½d.

PIONEER PRESS PUBLICATIONS.—(Continued.)

JOHN WILLIAM DRAPER :

HISTORY OF THE CONFLICT BETWEEN RELIGION AND SCIENCE. 395 pages. 2s., postage 4½d.

CHRISTIANITY AND CIVILIZATION. A Chapter from *The History of the Intellectual Development of Europe*. 2d., postage ½d.

H. G. FARMER :

HERESY IN ART. The Religious Opinions of Famous Artists and Musicians. 2d., Postage ½d.

G. W. FOOTE :

CHRISTIANITY AND PROGRESS. With a Chapter on Mohammedanism. 2d., postage ½d.

THE PHILOSOPHY OF SECULARISM. 2d., postage ½d.

WHO WAS THE FATHER OF JESUS? 1d., postage ½d.

THE BIBLE HANDBOOK. For Freethinkers and Inquiring Christians. (With W. P. BALL.) Seventh Edition. 2s. 6d., postage 2½d.

BIBLE ROMANCES. 2s. 6d., postage 3d.

THE JEWISH LIFE OF CHRIST. Translated from the Hebrew. Preface by G. W. Foote, 6d., postage ½d.

COLONEL R. G. INGERSOLL :

MISTAKES OF MOSES. 2d., postage ½d.

THE HOUSEHOLD OF FAITH. 1d., postage ½d.

IS SUICIDE A SIN? AND LAST WORDS ON SUICIDE. 2d., Postage ½d.

WHAT IS RELIGION? Contains Col. Ingersoll's Confession of Faith. 1d., postage ½d.

WHAT IS IT WORTH? A Study of the Bible. 1d., postage ½d.

PIONEER PRESS PUBLICATIONS.—(*Continued.*)

J. T. LLOYD :

GOD-EATING. A Study in Christianity and Cannibalism. 3d., postage ½d.

M. M. MANGASARIAN :

THE MARTYRDOM OF HYPATIA. 1d., postage ½d.

W. MANN :

MODERN MATERIALISM. A Candid Examination. Paper, 1s. 6d., postage 2d.

SCIENCE AND THE SOUL. With a Chapter on Infidel Death-Beds. 3d., postage 1d.

PAGAN AND CHRISTIAN MORALITY. 2d., postage ½d.

THE RELIGION OF FAMOUS MEN. 1d., postage ½d.

CHRISTIANITY IN CHINA. An Exposure of Foreign Missions. Price 6d., postage 1d.

GERALD MASSEY :

THE HISTORICAL JESUS AND MYTHICAL CHRIST. A Demonstration of the Origin of Christian Doctrines in the Egyptian Mythology. 6d., postage 1d.

A. D. McLAREN :

THE CHRISTIAN SUNDAY: ITS HISTORY AND ITS FRUITS. 2d., postage ½d.

C. E. VOLNEY :

RUINS OF EMPIRES. With the Law of Nature. Revised Translation, with Portrait, Plates, and Preface by GEORGE UNDERWOOD. 5s., postage 3d.

VOLTAIRE.

THE PHILOSOPHICAL DICTIONARY. A Selection of all the Articles bearing on Religion. Unabridged. First Series. 6d., postage 1d.

THE SECULAR SOCIETY, Limited.

Registered Office: 62 Farringdon Street, London, E.C. 4.
Secretary: MISS E. M. VANCE.

THIS Society was formed in 1898 to afford legal security to the acquisition and application of funds for Secular purposes. THE Memorandum of Association sets forth that the Society's Objects are :—To promote the principle that human conduct should be based upon natural knowledge, and not upon supernatural belief, and that human welfare in this world is the proper end of all thought and action. To promote freedom of inquiry. To promote universal Secular Education. To promote the complete secularization of the State, etc. And to do all such lawful things as are conducive to such objects. Also to have, hold, receive, and retain any sums of money paid, given, devised, or bequeathed by any person, and to employ the same for any of the purposes of the Society.

Members pay an entrance fee of ten shillings, and a subsequent yearly subscription of five shillings. The liability of members is limited to £1, in case the Society should ever be wound up.

The Society's affairs are managed by an elected Board of Directors, one-third of whom retire (by ballot), each year, but are eligible for re-election.

Friends desiring to benefit the Society are invited to make donations, or to insert a bequest in the Society's favour in their wills. The now historic decision of the House of Lords in *re Bowman and Others v. the Secular Society, Limited*, in 1917, a verbatim report of which may be obtained from its publishers, the Pioneer Press, or from the Secretary, makes it quite impossible to set aside such bequests.

A Form of Bequest.—The following is a sufficient form of bequest for insertion in the wills of testators :—

I give and bequeath to the Secular Society, Limited, the sum of £— free from Legacy Duty, and I direct that a receipt signed by two members of the Board of the said Society and the Secretary thereof shall be a good discharge to my Executors for the said Legacy.

It is advisable, but not necessary, that the Secretary should be formally notified of such bequests, as wills sometimes get lost or mislaid. A form of membership, with full particulars, will be sent on application to the Secretary, 62 Farringdon Street, London, E.C. 4.



